

CIRCLE OF POISON: IMPACT OF U.S. PESTICIDES ON THIRD WORLD WORKERS

HEARING

BEFORE THE

COMMITTEE ON AGRICULTURE,
NUTRITION, AND FORESTRY
UNITED STATES SENATE

ONE HUNDRED SECOND CONGRESS

FIRST SESSION

ON

THE IMPACT ON THIRD WORLD WORKERS WHO USE U.S.-MADE
PESTICIDES

JUNE 5, 1991

Printed for the use of the
Committee on Agriculture, Nutrition, and Forestry



For sale by the U.S. Government Printing Office
Superintendent of Documents, Congressional Sales Office, Washington, DC 20402
ISBN 0-16-035325-4

5161-26

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CIRCLE OF POISON: IMPACT OF U.S. PESTICIDES ON THIRD WORLD WORKERS

WEDNESDAY, JUNE 5, 1991

U.S. SENATE,
COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY,
Washington, DC.

The committee met, pursuant to notice, at 10:08 a.m., in room SD-192, Dirksen Senate Office Building, Hon. Patrick J. Leahy (chairman of the committee) presiding.

Present or submitting a statement: Senators Leahy, Lugar, and Grassley.

STATEMENT OF HON. PATRICK J. LEAHY, A U.S. SENATOR FROM VERMONT

The CHAIRMAN. Good morning.

Today is the 19th anniversary of the United Nations Stockholm Conference which set out principles for a better global environment. It is fitting that today this committee hears testimony on the Circle of Poison.

When we speak of the Circle of Poison, we most often think of the danger to American consumers. We think of foreign-grown food, scarcely inspected by FDA at the U.S. border, tainted with U.S.-made pesticides that EPA considers cancer causing and too dangerous for domestic farm use.

But these pesticides are also a danger to American workers who make them and to the Third World workers who use them. Today, as part of a series of hearings, we will focus on the devastation abroad.

The most graphic example is the pesticide DBCP.¹ In 1958, separate studies by two U.S. chemical manufacturing giants showed that DBCP causes sterility in laboratory animals. These, and later industry studies, were kept secret from domestic chemical company employees and from agricultural workers using DBCP in the field.

Now, tragically, 20 years later, the sterilization that had been predicted by laboratory tests became a reality—increasing numbers of workers in the manufacturing plants and banana fields found they could not have children. EPA finally banned DBCP from nearly all domestic farm uses, but the companies then dumped their unused stocks overseas where it continued to be used. As a result, more banana workers in Costa Rica were sterilized.

¹ 1,2-dibromo-3-chloropropane, or DBCP.

The tale of DBCP is an appalling one. In the blind pursuit of corporate profits, several chemical company giants ignored their own scientists, kept studies secret from their own employees, dumped their poisons overseas, and devastated the lives of thousands of unsuspecting and completely innocent people.

The behavior was, and is, immoral and reprehensible. We in the United States must make certain that it never happens again.

But, unfortunately, under our laws it could happen again. Today, chemical companies still export tons of pesticides that EPA considers too dangerous for our farmers to use. Yet, EPA cannot tell us how many of these made-in-the-U.S. unregistered pesticides are currently being exported.

Most of these unregistered pesticides cause long-term health problems, such as cancer. So it may take 20 years before the affliction, predicted by laboratory tests, show up in human beings. If we are aware of the problem now, why are we treating the Third World like an open-air dumping ground and its citizens like human guinea pigs?

We must also be concerned that when EPA takes action to protect American farmers and consumers by banning a pesticide, it has the effect of dumping the culprit on an unsuspecting Third World, causing further injury there. As EPA reviews the safety of hundreds of older pesticides as required by the 1988 law—and I am concerned, incidentally, that EPA is not moving fast enough in this area—I do not want these pesticides to be the harbingers of death and injury abroad.

In the Third World, it is not just banned and unregistered pesticides that are causing problems. Because of the different way they are handled in the Third World, restricted-use pesticides—those that are legal to use in the United States but considered hazardous enough to require special protection and handling—are also causing acute problems because the strict standards of use are not being followed.

In 1985, the World Health Organization estimated that 3 million people were poisoned by pesticides each year, resulting in 220,000 deaths and 37,000 threatened by long-term chronic disease such as cancer. New, 1990 analysis estimates that 25 million agricultural workers suffer an episode of pesticide poisoning each year—25 million.

The use of all pesticides increased by 37 percent between 1983 and 1988. It is projected to increase another 55 percent by 1993. Incidentally, in Latin America, these figures are 45 and 40 percent.

The Circle of Poison Prevention Act [S. 898]² addresses many of the problems with Third World pesticide use. In fact, similar legislation was supported last year by an official from the Ecuadorian Government who explained her difficulty in monitoring and controlling the use of pesticides entering her country from abroad. This year's legislation has been endorsed by the Agriculture Department of the Philippines for many of the same reasons.

Some argue we have no right to tell other nations what pesticides they can use or how to use them. The same argument was

² See pp. 151-210 for the reprint of S. 898

made when the Drug Enforcement Administration blocked U.S. companies from exporting chemicals being diverted to process cocaine. The Administration argued that it is important for the United States to take a leadership position to stop the spread of drugs.

The United States also took unilateral action against exports used to manufacture chemical weapons. Last Friday, The Washington Post reported that 19 nations have followed the United States lead. One Administration official called it a "major breakthrough," saying that "to have taken this action so rapidly is quite an accomplishment."

In both cases the Administration officials said it is important for the United States to take a leadership role in restricting the export of certain chemicals. I would hope the Administration also uses its clout to stop the poisoning of workers and their families and the environment in the Third World.

And I would hope that this year the administration would work with us to pass this bill so that future DBCP's do not happen. We have a lot of work ahead of us. It is a most serious matter.

As I said last year at the end of the farm bill when we were unable to get the Circle of Poison legislation through [S. 2227],³ we would revisit it this year, and I will continue to revisit it until good, solid, realistic legislation is passed.

[The prepared statement of Senator Leahy, the History of DBCP, and an article from the Austin American-Statesmen, "Ugly secret: Sterility," follow:]

PREPARED STATEMENT OF HON. PATRICK J. LEAHY, A U.S. SENATOR FROM VERMONT

Today is the 19th anniversary of the United Nations Stockholm Conference which set out principles for a better global environment. It is also the 6th year of the "Dirty Dozen" campaign, launched by the Pesticide Action Network to target particularly hazardous pesticides for strict controls and elimination. It is fitting that today this committee hears testimony on the Circle of Poison.

When we speak of the Circle of Poison, we most often think of the danger to American consumers. We think of foreign-grown food, scarcely inspected by FDA at the U.S. border, tainted with U.S.-made pesticides that EPA considers cancer causing and too dangerous for domestic farm use.

But these pesticides are also a danger to American workers who make them and to Third World workers who use them. Today, we will focus on the devastation abroad.

The most graphic example is the pesticide DBCP. In 1958, separate studies by two U.S. chemical manufacturing giants showed that DBCP causes sterility in laboratory animals. These and later industry studies were kept secret from domestic chemical company employees and from agricultural workers using DBCP in the field.

Twenty years later, the sterilization predicted by laboratory tests became a reality—increasing numbers of workers in the manufacturing plants and banana fields found they could not have children. EPA finally banned DBCP from nearly all domestic farm uses, but the companies then dumped their unused stocks overseas where it continued to be used. As a result, more banana workers in Costa Rica were sterilized.

The tale of DBCP is an appalling one. In the blind pursuit of corporate profits, U.S. chemical company giants ignored their own scientists, kept studies secret from their own employees, dumped their poisons overseas, and devastated the lives of thousands of unsuspecting and innocent people.

The behavior was, and is, immoral and reprehensible. We in the United States must make certain that it never happens again.

³ See the hearing: Preparation for the 1990 Farm Bill, Circle of Poison: The Pesticide Export Reform Act of 1990—S. 2227, S. Hrg. 101-259, Part XV.

But it can happen again. Today, U.S. chemical companies still export tons of pesticides that EPA considers too dangerous for our farmers to use. Yet, EPA cannot tell us how many of these made-in-the-U.S. unregistered pesticides are currently being exported.

Most of these unregistered pesticides cause long-term health problems, such as cancer, as opposed to short-term ailments, such as severe illness. So it may take 20 years before the affliction, predicted by laboratory tests, shows up in human beings. If we are aware of the problem now, why are we treating the Third World like an open-air dumping ground and its citizens like human guinea pigs?

We must also be concerned that when EPA takes action to protect American farmers and consumers by banning a pesticide, it has the effect of dumping the culprit on an unsuspecting Third World, causing further injury there. As EPA reviews the safety of hundreds of older pesticides as required by the 1988 law—and I am concerned that EPA is not moving fast enough in this area—I do not want these pesticides to be the harbingers of death and injury overseas.

In the Third World, it is not just the U.S.-illegal (banned and unregistered) pesticides that are causing problems. Because of the different way they are handled in the Third World, restricted-use pesticides—legal to use in the United States but considered hazardous enough to require special protection and handling—are causing acute problems.

The World Health Organization's 1990 *Public Health Impact of Pesticides Used in Agriculture*, concludes that in many developing countries, inadequate protection, poorly maintained equipment, "hot climate conditions and the general lack of education make pesticide use more dangerous to the operator than in developed countries." Other problems are cited:

In the developed countries, much of the pesticide used is applied by professional operators. In developing countries, pesticides are applied almost entirely by farmers, many of whom have insufficient education and training in the different forms of application. The farmers often lack awareness and do not take elementary precautions. . . .

In developed countries, the registration authorities require the labelling and packaging to be adequate and safe, to minimize excessive or unnecessary use. In contrast, the labelling and packaging of pesticides in developing countries are often inadequate and inappropriate for the area where they are used. The advice is often written in a language that the user does not understand and the toxicity is explained poorly or not at all; the appropriate uses of the pesticide are usually not stated clearly and the dosages are [not] specified. (Pages 77-78.)

In 1985, WHO estimated that 3 million people were poisoned by pesticides each year, resulting in 220,000 deaths and 37,000 suffering from long-term chronic disease such as cancer. New, 1990 analysis estimates that 25 million agricultural workers suffer an episode of pesticide poisoning each year. In fact, one U.S.-made, restricted-use pesticide, paraquat, is so lethal that it is the leading choice of suicide in the Third World.

The use of all pesticides—including those that are banned, unregistered, and restricted-use—increased by 37.5 percent between 1983 and 1988, and is projected to increase another 55 percent by 1993. For Latin America, these figures are 45 and 40 percent.

The "Circle of Poison Prevention Act" addresses many of the problems with Third World pesticide use by:

- Largely banning the export of pesticides which are not registered and have no food tolerance;
- Providing other countries with specific information about "restricted-use" pesticides and then allowing them to refuse the pesticide;
- Notifying nations of EPA's significant pesticide regulatory decisions;
- Requiring pesticide labels to be written in an official language, and meet the legal requirements, of the country where the pesticide will be used;
- Letting other nations decide if they want experiments on unregistered pesticides conducted within their borders; and
- Requiring EPA to take a leadership role in developing multinational pesticide export control measures and in assisting foreign countries in developing better pesticide regulatory and sustainable agriculture programs.

In fact, similar legislation was supported last year by an official from the Ecuadorian government who explained her difficulty in monitoring and controlling the use of pesticides entering her country from abroad. This year's legislation has been

endorsed by the Agriculture Department of the Philippines for many of the same reasons.

Some argue that we have no right to tell other nations what pesticides they can use or how to use them. But the same argument was made when the Drug Enforcement Administration blocked U.S. companies from exporting chemicals being diverted to process cocaine. The Administration argued that it was important for the United States to take a leadership position to stop the spread of drugs.

The United States also took unilateral action against exports used to manufacture chemical weapons. Last Friday, The Washington Post reported that 19 nations have followed the United States lead. One Administration official called it a "major breakthrough," saying that "to have taken this action so rapidly is quite an accomplishment."

With both proposals, Administration officials say it is important for the United States to take a leadership role in restricting the export of certain chemicals. Why can't this Administration use its clout to stop the poisoning of workers, their families and the environment in the Third World?

And why can't this Administration work with us to pass this bill, instead of blocking it, so that future DBCP's do not happen?

Today, we will hear from two workers who were sterilized by DBCP and from the wife of one of the workers. We will also hear from experts on the extensive use of pesticides in the Third World.

We will not, however, hear today from the chemical companies. Twelve days ago, the Senate Agriculture, Nutrition, and Forestry Committee invited makers of banned, unregistered and restricted-use pesticides to testify at the hearing, including: Dow Chemical Co. (DowElanco), Monsanto Co., FMC Corp., Rhone-Poulanc Inc., ICI Americas Inc., E.I. du Pont de Nemours & Co., Velsicol Chemical Corp., and Mobay Corp. Nine days ago, the committee invited American Cyanamid Co. as well. All these companies declined the committee's invitation to testify at this hearing, contending that they did not have enough time to prepare for the hearing.

We have always planned to have a second hearing on this issue and will again invite the companies to testify at that time. It is important for the committee to hear their point of view on this issue.

THE HISTORY OF DBCP

EARLY 1950's

DBCP is discovered as extremely effective in killing nematodes, microscopic worms that attack the roots of many crops.

1958

Separate studies by chemical manufacturers, Dow and Shell, find that in laboratory animals DBCP damages the testicles, reduces sperm count, and causes precancerous lesions at almost every exposure level.

1960's-1970's

DBCP is used around the world to kill insects on a variety of fruits, nuts, and vegetables.

1970-74

The National Cancer Institute, Soviet scientists and another Dow-Shell study all corroborate the 1958 studies.

The results of these studies were not revealed to either domestic or foreign workers handling DBCP through the 1970's.

SPRING 1977

While the wives of workers at Occidental's (another chemical manufacturing giant) DBCP plant talked in the bleachers as their husbands played softball, a common problem is revealed: many were not having children.

SUMMER 1977

Studies of Occidental workers and the employees of 17 other DBCP plants found a "uniform pattern." "Workers with more than 90 days exposure had markedly impaired sperm counts, and as many as 70 percent of them were sterile."
California bans DBCP.

AUGUST 1977

EPA suspends the use of DBCP on many food crops, continues to allow companies to dump huge quantities overseas.

1979

EPA bans all uses of DBCP except one—pineapples in Hawaii. That too was cut off in 1985.

Although workers had complained of sterility since 1977, Standard Fruit (an American fruit producer) finally halts use of DBCP in early 1979, but ships huge stockpiles of the chemical to Honduras, where its use continues until November 1979.

Note:

On March 24-26, 1991, the *Austin American Statesman* ran 12 stories by staff reporter Bill Collier on the Circle of Poison. This is one of those articles.

PUBLISHED SINCE 1871

Monday, March 25, 1991

Ugly secret: Sterility

DBCP poses dangers to farm workers

Pesticides banned in this country are being sold abroad, where their use often leaves a trail of sickness and death. Part 2 of a series examines one chemical in the Circle of Poison.



By Bill Collier
American-Statesman Staff

RIO FRIO, Costa Rica — Visitors to this banana plantation company town could travel the dirt main street, with its smattering of simple shops and modest homes, and never learn the community's dark secret.

Hints come in the form of anguished whispers between husband and wife, crude taunts men reserve for one another, and the wistful glances at passing children from couples who can never have their own.

In Rio Frio, which exists to produce bananas for the Standard Fruit Co. to sell under the Dole label, the secret has become a malignancy that, for its victims, strips away the very purpose of life — leaving divorce, alcoholism and suicide.

The truth, residents say, is that at least 825 men who have called Rio Frio home, who toiled under the endless canopy of banana plant leaves, are now sterile. They believe — as do their doctors and lawyers — that they are victims of the pesticide DBCP.

See Sterility, A7



UNABLE TO HAVE children of their own, Waldemar Loaiza Calvo and his wife, Alicia, adopted a son, Raymond. Loaiza, 47, is among hundreds of Costa Ricans who say they were rendered sterile by the pesticide DBCP.



WORKERS TOIL UNDER a canopy of banana plant leaves in Rio Frio, men who have worked in Rio Frio are now sterile — the victims, they believe, of the pesticide 1,2-dibromo-3-chloropropane, or DBCP which exists to produce bananas for the Standard Fruit Co. At least 825

Staff photos by David Kennedy

The EPA's actions show how decisions by the U.S. government and other countries have ended the use of pesticides in other countries as well as the American people, according to environmental groups.

The U.S. government initially approved DBCP for use on crops in spite of scientific evidence that it caused sterility and cancer in animals and without any warning to people who would have to make it and use it. Even after DBCP had sterilized employees in a California pesticide plant — prompting state and federal supervision of its use — U.S. firms continued to use the pesticide in foreign countries.

In Costa Rica plantiffs are called *los afectados* — the affected ones. But they weren't the first DBCP victims or the last. The pesticides left victims from Canada and Israel to Panama and Honduras. Cancer studies of those exposed to the chemical are just beginning.

There is no DBCP in still being made in Europe for shipment to Third World nations. Dow and Shell in the early 1980s independently found it extremely effective in killing nematodes, microscopic worms that live in the soil and attack the roots of banana plants and other crops.

In 1984, scientists for Dow and Shell separately reported that in tests on laboratory animals, DBCP shriveled the testicles, reduced sperm counts to zero and caused pre-cancerous lesions at virtually every exposure level.

Nevertheless, DBCP was registered for use on food crops by the Environmental Protection Agency's predecessor in 1970. In 1972, the U.S. Department of Agriculture, the National Cancer Institute and another Dow-Shell team corroborated the 1958 studies.

Yet none of this information was translated into meaningful warnings in the product labels approved by the federal government. The labels on Dow's DBCP, marketed as Fumazone, and Shell's product, Nemagon, bore little more than the standard warnings against swallowing the chemicals, inhaling its vapors or getting it on the skin.

From the mid-1970s through the 1970s, DBCP was used in the United States and around the world to kill insects on a variety of fruits, nuts, vegetables and ornamental plants and flowers.

While thousands of workers came into contact with DBCP — either in the plants where it was manufactured, or in the fields where it was mixed and applied — apparently none had any inkling of its hazards.

Even officials at Occidental Chemical's plant at Lathrop, Calif. — which made DBCP for its own use in banana and other crops — said they were never informed that DBCP had caused sterility and cancer in lab tests.

Dow and Shell "left the workers in complete, total ignorance," said Duane Miller, a Sacramento lawyer who later represented Occidental workers in lawsuits against the chemical firms.

In fact, they told workers this was one of the safest chemicals they would work with. And as a result, they had generations of children with DBCP-related ailments, including cancer.

In Costa Rica, Standard Fruit employees worked with DBCP throughout the 1970s. Initially, it was applied in irrigation ditches, but this practice was halted after fish kills in nearby streams brought protests. Then it was injected into the soil with a device resembling a small jackhammer.

"Nobody told us that it was a poison," said Carlos Luis Munoz Ramirez, 42, who was one of the first to become ill. But obviously he didn't know. If you put even a little amount of DBCP on the soil, it will kill it," said Roberto Chavez, a toxicologist who has done extensive research on DBCP, said field hands were exposed to the chemical as a vapor.

"The workers inject it in the ground, and the steam brings it out under the canopy of leaves," Chavez said. "We have many workers who never touched the product who were affected. One was a boy who simply carried lunch to his family members in the fields."

Meanwhile, in 1977, meeting at softball games and other company outings, the families of workers in Occidental's unit making DBCP discovered many of them had something in common. They weren't having any children.

Studies of the employees of the Occidental workers — and the employees of 17 other DBCP manufacturing plants — found a "uniform pattern," Miller recalled. "Workers with more than 90 days' exposure had markedly impaired sperm counts, and as many as 70 percent of them were sterile."

The State of California then banned DBCP, and in August 1977, the EPA suspended its use on many food crops. Dow and Shell stopped manufacturing and sent letters warning customers that including Standard Fruit in the list of users could cause sterility. Standard Fruit then showed an unusual pattern in other manufacturing plants. The next year, the EPA further restricted the use of DBCP. Then, in 1979, the agency suspended all its uses except one — on pineapples in Hawaii. That was allowed until 1985.

Although the EPA had restricted DBCP use in this country, it was legal for U.S. manufacturers to continue shipping it and using it in other countries. Standard Fruit continued to use DBCP on its Costa Rica plantations, even though many workers had complained of sterility in 1977. Standard did not halt DBCP use in Costa Rica until late 1978 or early 1979, under pressure from the Costa Rican government.

But Standard still had large stocks of DBCP in Costa Rica. So they were shipped to Honduras, where DBCP use continued. Finally, in November 1979, Standard's parent firm, Castle & Cooke, announced it would no longer use DBCP anywhere in the world — except on its Hawaiian pineapple plantations.

In the Hispanic cultures of Central America — where a man's virility is often measured by his ability to father children — the devastation wrought by DBCP-induced sterility was more than physical. It was also psychological. It was the loss of a thing that could happen to a husband, and it was the loss of a thing that could happen to a wife. It was the loss of a thing that could happen to a family.

Said co-worker Margarito Zuniga Gutierrez, 38, another who was made sterile: "What a husband and wife most want is to have children. And when you can't, you feel somehow inferior to others who can."

Bitterly disappointed that their union would produce no children, many wives of the affected men stayed on, but the knowledge that their husbands had been made sterile was a constant reminder. Some of the men also became impotent. Others became alcoholics, and a few attempted suicide. To some of their less compassionate neighbors and co-

workers, they also became objects of ridicule — and obvious sarcasm.

"One they call 'the bull' because he's a hard worker but has no testicles," said Chavez, who has provided research for the workers' union. "Another they call 'the rabbit' because he has no children."

A few of the wives, desperate for children, have reached beyond the bounds of wifedom for help.

"This is what they call 'the miracle,'" Chavez said. "She is pregnant, and he has no sperm count. They know the doctor said they can't have children, they just stay quiet about it."

Loatza and his wife of seven years, Alicia, were fortunate enough to be able to informally adopt a relative's child, Raymond, now 3. "He is what is tying us together," said Loatza.

Others, like Zumbado, haven't been as fortunate. He and his wife left him because they could have no children. He and his second wife, Victoria, have investigated formal adoption or artificial insemination — but found they involved excessive cost or dealings with government bureaucracy in San Jose, the capital, which is across the mountains from the banana zone.

Zumbado expressed his anguish this way: "If I'm walking down the street and I see a woman with a beautiful child, instead of feeling happy, I look the other way."

In California, 57 Occidental workers brought lawsuits over their sterility. Fifty of the cases were settled, but seven went to trial with Miller as their attorney. The amounts paid the California workers ranged from \$50,000 to \$2.3 million, Miller said.

But in Costa Rica, where the workers turned for help to the national insurance program, the disabled workers were given payments ranging from \$500 to \$4,000, ranging from \$1,000 to \$3,000 for San Jose lawyers.

At the urging of Chavez's sister, a San Jose lawyer, the banana workers contacted Baron and Budd — a Dallas law firm specializing in litigation over injuries resulting from toxic chemicals. Baron and Budd filed the first lawsuits in the U.S. seven years ago.

The law firm is also in contact with afectados in Honduras, where Mario Quintanilla, an official with the banana workers' union, said he knows of at least 200 men made sterile by DBCP.

Attorneys for Standard Fruit, Occidental and Standard Fruit say they expect to prevail when and if the complex lawsuits come to trial in Houston.

Dow and Shell lawyers denied they withheld any of the scientific information — saying the early health studies were turned over to USDA when they sought to register DBCP. The label warnings, they added, were approved by the USDA and later the EPA.

Now attorney Larry Looby said the studies themselves will also be the subject of questions.

"They involved massive doses of short duration," said Looby. "When you take them out of context, you can't draw conclusions that their results would also apply to humans."

Shell spokesmen said they will prove their products were never used by Standard's Costa Rican plantation workers. "I don't think they have the foggiest idea what they were working with," said Shell attorney Kurt Ballantyne.

Occidental and Standard Fruit also filed the most recent suit filed by the Costa Rican workers. The same defense, said the firm's attorney, Stephen Lewis of San Francisco.

Standard Fruit officials say they followed all safety instructions provided by DBCP manufacturers.

"I think there is a legitimate question as to whether there has been any widespread injury," said a Standard spokesman, who refused to be quoted by name except that degree of exposure simply isn't possible to determine.

In addition, defense attorneys claimed many, if not all, of the plaintiffs in the case filed suit more than two years after they knew they had DBCP-induced injury and thus are barred by the statute of limitations.



While the preparatory skirmishes for their courtroom drama are played out in U.S. courts, life goes forward unchanged on Rio Frio's plantations.

One affected, Jorge Vega, 40, said he has thought of leaving Rio Frio in search of a better life, but he has built up in 18 years' employment with Standard. He and his wife have turned to their religion for comfort.

"Some of us have become closer to God through all of this," Vega said.

Chavez said he is concerned that the pesticide — which can persist in the environment for up to 100 years — may still pose hazards for workers at Rio Frio more than a decade after Standard stopped using it.

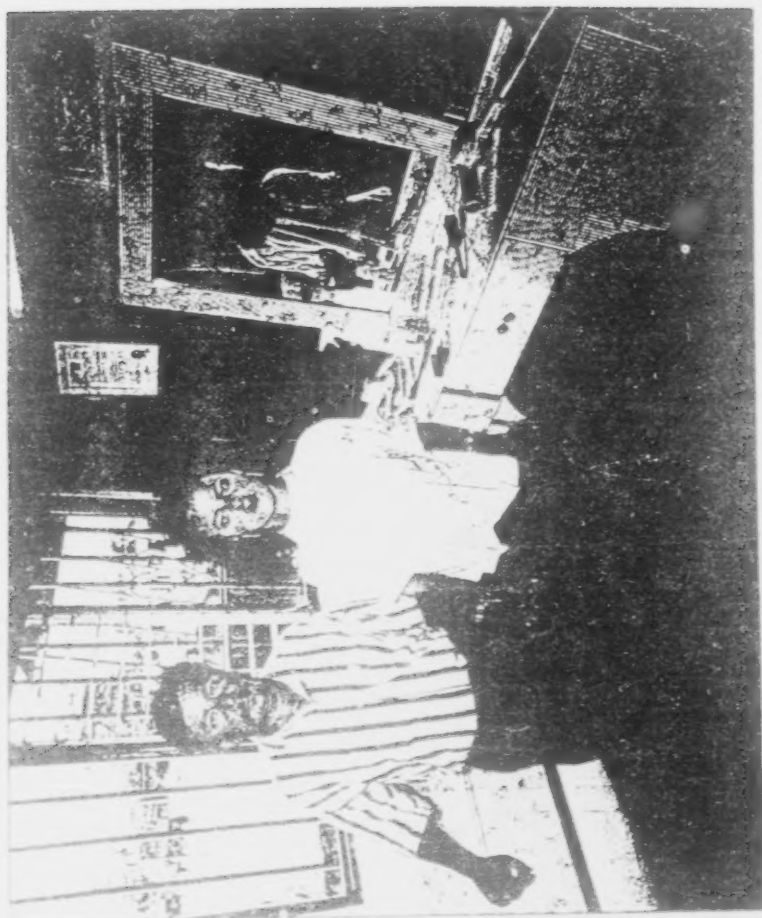
Millions of pounds of it were put into the soil. So a large amount of the product is still stored there, Chavez said.

Despite its terrible past, DBCP is still being made for use in Third World countries, said Oscar Castillo, a San Jose film maker working on a movie dramatizing the DBCP story.

Castillo said he found a factory in France making it and believes it is being made elsewhere.

"It doesn't matter what happens in Costa Rica now — it's the future of others in the world that's important," Castillo said.

"It's not a scientific error anymore to be making and selling DBCP," he said. "This is an organized crime, worse than selling crack."



MARIO ZUMBADO IS one of hundreds of Costa Ricans who have sued DRCP manufacturers, if I had a choice between having a million dollars and being able to have a son of my own. I would choose to have a son. Zumbado, a former banana plantation worker who became sterile and is now Rio Frio's barber. His first wife left him because they could have no children. He and his second wife, Victoria, explored the possibilities of formal adoption or artificial insemination, but rejected them because of expense.

The CHAIRMAN. Before we go to the witnesses, of course, I want to yield to Senator Lugar for whatever comments he may wish to make.

STATEMENT OF HON. RICHARD G. LUGAR, A U.S. SENATOR FROM INDIANA

Senator LUGAR. Thank you very much, Mr. Chairman. I commend you for holding this hearing and allowing our committee to consider the problems faced by the Third World concerning the use of exported pesticides.

During last year's farm bill debate, the so-called Circle of Poison was discussed quite substantially, and although the conference committee did not adopt any provisions to reform pesticide export regulations, I am confident that with ample consideration this committee can produce reforms that are responsible and fair.

I want to reiterate my position that pesticides which have been banned because of serious concerns about human health should not be exported from this country, even if they continue to be approved by foreign governments.

It is my understanding that while individual chemical companies will not be testifying today, there will be a future hearing scheduled, during which time they and others can present their views. I look forward to that and other hearings which will elucidate the pesticide export issue further.

I have also asked the administration for their views and requested that the hearing record should remain open until the close of business Friday or until a hearing is held in which the administration can be heard.

Finally, I am hopeful that this committee will have the opportunity under your leadership, Mr. Chairman, to mark up any legislative proposals and consider viable alternatives prior to floor debate.

I thank you once again for holding the hearing, and obviously the attendance of this hearing underscores the importance of the issue.

The CHAIRMAN. Thank you. Before I yield to Senator Grassley, let me note that all the requests that you have made and all the suggestions you have made, of course, are perfectly legitimate and, naturally, they will be followed. I will keep the hearing record open for whatever time you wish.

Senator LUGAR. Thank you.

The CHAIRMAN. The FDA will be invited to a subsequent hearing. Each of the major chemical companies were invited to testify well in advance of today's hearing, but they declined to appear. They will again be invited to the subsequent hearing. In a hearing like this, I intend to have all sides presented and all sides have an opportunity to be heard. EPA has already been heard, and the FDA certainly needs to be heard as well. Whatever administration positions they want in the record, as you know, will be included.⁴

⁴ See pp. 83-86 for a joint prepared statement of Linda Fisher, Assistant Administrator for Pesticides and Toxic Substances, Environmental Protection Agency and Daniel D. Haley, Administrator, Agricultural Marketing Service, U.S. Department of Agriculture.

Senator LUGAR. Well, I thank the Chair, and I appreciated your earlier statement that you hope that the administration might work with the committee. I am sure of that hope.

The CHAIRMAN. Senator Grassley.

Senator GRASSLEY. Mr. Chairman, I am not going to take the time of the committee to go through my statement. I will just put it in the record—it is a short, general statement—because I look forward to these hearings, and hopefully we will be able to hear all sides. And you have assured us that we can, and that is all we can expect out of a fair chairman. So thank you very much.

[The prepared statement of Senator Grassley follows:]

PREPARED STATEMENT OF HON. CHARLES E. GRASSLEY, A U.S. SENATOR FROM IOWA

Mr. Chairman, I am here today to learn about the affect that some chemicals may have had on people who work with these products.

I would note that a compromise was rejected during last year's farm bill conference which would have prevented the export of chemicals which have been banned for use in the United States for health reasons. The delay in implementing this provision is regrettable. The manufacture and use of chemicals—along with the consumption of food treated with these chemicals—is important to all of us consumers and we owe it to ourselves and the American people to ensure its continued safety.

I hope that at future hearings we will be able to hear from U.S. groups, manufacturers and Administration officials to learn what steps have been taken in the past, those that are ongoing, as well as new initiatives to prevent the tragic personal harm that has come to these foreign workers. There is much we can learn from hearing from all parties on this controversial subject.

Thank you.

The CHAIRMAN. Thank you. Well, it is too important a subject not to make sure that all are heard.

Let me just introduce the panel—Dr. Roberto Chaves is a toxicologist. He was previously a professor of toxicology at the University of Costa Rica College of Medicine for 20 years.

Also before us is Waldemar Loaiza who is currently employed in agricultural production in Costa Rica, and Mario Zumbado who was formerly a worker on a banana plantation where he was exposed to DBCP. Mrs. Victoria Zumbado is his wife, sitting next to him.

Ms. Arizu is a translator from the U.S. Department of State who is helping out today with the translation.

We will begin with Dr. Chaves.

STATEMENT OF ROBERTO A. CHAVES, SILVER SPRING, MD

Dr. CHAVES. Thank you, Mr. Chairman. I have submitted a written statement for the record.

The CHAIRMAN. That will be included in the record as though read.

Dr. CHAVES. I am going to leave some paragraphs out and summarize.

DBCP TRAGEDY IN COSTA RICA

For a decade, enormous amounts of DBCP were injected around the roots of each of the millions and millions of banana plants that occupy the majority of the choice low-lying, windless and warm flat lands of the Caribbean and northern half of the country, as well as the rainy Southern Pacific flats.

In the sprawling banana plantations, there are no other trees or plants. The rows of banana plants are approximately 3 feet apart. In the rows themselves, the plants are closer together. The leaves of the banana plants are a single, long, smooth, continuous soft, and flexible oblong blade, from 3 to 5 feet in length, and 10 to 18 inches wide. Two of these leaves are enough to protect a person from the rain; you can put them over your head.

Mature banana plants are approximately 8 to 9 feet tall, with all the many leaves at the top. The leaves of one plant loosely interweave with the next one, forming a thick canopy of leaves that covers the entire field.

The wind in the region, measured atop 30-foot towers, moves at a velocity of less than 6 miles per hour. Inside the plantation, under the canopy of leaves, the air does not move. The soil is very wet, and when the Sun warms up the Earth the soil releases the moisture into the still air. All day long, the temperature fluctuates little, remaining around 86 degrees Fahrenheit. At night, it only drops to about 76.

Scattered at specific distances from each other, small workers' family housing blocks, small communities with a plaza, a grocery store, and an elevated water tank, which stores water from the local deep wells, breaks the monochromatic landscape. Downward, toward the ocean, large and small towns flourish.

After each application of DBCP in a particular field, the characteristic hydrocarbon odor of the poison is felt for days by everyone in these communities. The upwind neighboring communities also feel the vapors' unmistakable presence.

The manufacturers of the pesticide and the pesticide analysts classified DBCP as a soil fumigant. Soil fumigants are active compounds which penetrate the soil and move through it as fumes or vapor. After injecting a small emulsified amount in the soil, the fumes are expected to propagate around the injection point. As it happens, part of the poison's fumes propagate upward by itself or are carried by the water vapor, and part of the poison was carried deep into the ground by the rainwaters, where it is trapped by the adsorption forces of the clay and sand.

Being only slightly soluble in water, the enormous amounts of DBCP emulsion that was carried deep into the soil contaminated the entire deep water supply with a small but a constant proportion of the carcinogen. In all probability, it will take several decades for these extremely dangerous substances to disappear totally from the water supply.

The totality of the water consumed by the banana plantation workers and their families, as well as that consumed in the near and downstream towns, comes also from deep wells.

DBCP SHOULD ONLY BE HANDLED BY WORKERS USING A RESPIRATOR WITH BOTTLED AIR, FITTED WITH A PIPE WITH AIR PUMPED FROM THE OUTSIDE

Since the late 1950's, the chemists and toxicologists involved in production of DBCP for Dow and Shell Chemical Companies indicated that this product should only be handled by workers using a respirator with bottled air, fitted with a pipe with air pumped from

the outside, or with a respirator fitted with an approved canister to eliminate hydrocarbons.

During the decade of exportation and soil fumigation, information regarding the toxicity of this product was never given, neither to the workers nor to the Costa Rican health authorities.

THE HEAVY VAPOR ROSE FROM THE SOIL AND STAYED IN AND AMONG THE BANANA PLANTS

In the warm banana fields during, and sometime after each application, the heavy vapor rose from the soil and stayed in and among the banana plants. The intensity of the odor produced nausea, headaches, dizziness, light-headedness, and confusion in many of the workers. The inhaled DBCP produced clear symptoms of acute intoxication. The strong odor indicated that the air concentration was much higher than the olfactory threshold of 1.7 ppm.

PROBLEMS AT HOME

Once at home, the worker was frequently moody, feeling nauseous, with a poor sex drive, and often impotent. The wife of one of the workers told me that in their small wood, very open house, when her husband urinated at night, after a day of applying DBCP, the characteristic odor of the poison rose up from the urine.

The stronger, younger and more eager of the workers, and the ones with more need for extra pay, continued applying DBCP longer than the weaker and older workers.

AMONG MANY FAMILIES WITH CHILDREN OF WORKING AGE, THE TOTALITY OF THE MALE OFFSPRING WERE STERILIZED

Among many families with children of working age, the totality of the male offspring were sterilized. In some cases, young boys who went frequently to the plantations carrying lunches and snacks for their parents and brothers, also grew up to be sterile. The injuries to children at prepubescent and pubescent age are much more severe than in adults. These injuries affected expression of the secondary masculine characteristics as in early castration.

DBCP IS ONE OF THE MOST POTENT SYNTHETIC CARCINOGENICS AND MUTATION-CAUSING AGENTS

DBCP is one of the most potent synthetic carcinogenics and mutation-causing agents. Frequently, it is used as a reference substance to measure the carcinogenic potency and mutagenic potency of other chemicals. Due to the elusive nature of the epidemiology of cancer, mutations and birth defects, our initial clinical impression remains to be properly validated.

Sterility is just the final result of a series of injuries. The more common is total testicular atrophy, is what we see in every patient. And, also, these patients with affected spermatogenesis have a permanent shift of their pituitary-gonadal endocrine axis, having different types of problems.

Many of them complain of impotence.

Some of the less affected ones that produce some spermatozooids—the spermatozoid count varies with time a lot—have produced preg-

nancies. We suspect that these offspring could be affected by mutations. This is something that also remains to be studied.

After 10 or more years from the last exposure, in the vast majority of cases the clinical picture of testicular malfunction and atrophy has not changed.

THEIR PERSONAL AND FAMILY HISTORIES ARE FILLED WITH SUFFERING AND INFERIORITY COMPLEXES

The study of workers' personalities even by me, noninitiated in psychology, reveals deep and ugly scars and sometimes a gaping wound. Their personal and family histories are filled with suffering and inferiority complexes. Many of them see themselves as half-men. The conspiracy of the late 1970's and early 1980's to cover up the disaster was very effective. Only a few dozen of the workers understood partially what had happened to them. Many were told their condition was transient and it will respond to medical treatment. Many went for years receiving treatment, constantly embarrassed by mandatory masturbation in a medical office.

THE COSTA RICAN NEWS MEDIA HAS EXTENSIVELY COVERED THE PROBLEM

Due to the legal actions taken in Texas and Florida by Costa Rican DBCP victims against Dow, Shell and Standard Fruit Company, the Costa Rican news media has extensively covered the problem, and former banana workers are just now discovering that their infertility is not due to a bad turn of luck or to an act of God, but is the result of the action of some very greedy few that didn't regard them as human beings.

Thank you, Mr. Chairman.

[The prepared statement of Dr. Chaves and the attached paper of Dr. Lori Ann Thrupp, "Sterilization of Workers From Pesticide Exposure: Causes and Consequences of DBCP-Induced Damage in Costa Rica and Beyond" follow:]

TESTIMONY OF DR. ROBERTO A. CHAVES
BEFORE THE UNITED STATES SENATE COMMITTEE
ON AGRICULTURE, NUTRITION, AND FORESTRY

As a Costa Rican toxicologist, and as an unwilling witness of the still unfolding enormous DPCP tragedy that affected our country and other Latin American neighbors, I feel it is my first duty to congratulate Senator Patrick Leahy for his leadership in preventing the repetition of such incidents. As a Costa Rican that has made the United States his new home, I am proud of the "Circle of Poison Prevention Act."

The shameful conspiracy by both the manufacturers and transnational distributors-users to conceal information on the severity and diversity of the toxic effect of DBCP and the conspiracy to cover up the environmental disaster and drama that evolved in Costa Rica has been very well discussed by Dr. Lori Ann Thrupp in her April, 1990 paper "Sterilization of Workers from Pesticide Exposure: Causes and Consequences of DBCP-induced damage in Costa Rica" (copy enclosed). Miss Thrupp is an agricultural economist. She did an excellent research job analyzing documents available in the United States and in Costa Rica. She interviewed several Costa Rican physicians who speak only Spanish and her attempt to explain the mechanisms of the biological actions of DBCP and the resulting pathology is all wrong, and it could be misleading. But, that is only a very small part of an otherwise very good work.

The DBCP tragedy is by no means the only pesticide related incident in Costa Rica, but by far, the largest. The inventory of the human suffering and the measurement of the extent of the environmental damage has only started.

For a decade, enormous amounts of DBCP were injected around the roots of each of the millions and millions of banana plants that occupy the majority of the choice low-lying, windless and warm flat land of the Caribbean^{and} northern half of the country, as well as rainy southern Pacific flats.

In the sprawling banana plantations, there are no other trees or plants. The rows of banana plants are approximately three feet apart. In the rows themselves, the plants are closer together. The leaves of the banana plants are a single, long, smooth, continuous soft and flexible oblong blade from three to five feet in length and ten to eighteen inches wide. (Two of these leaves are enough to protect one person from light rain.)

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Mature banana plants are approximately eight to nine feet tall with all of the many leaves at the top. The leaves of one plant loosely interweave with those of the plants in the immediate surroundings, making a canopy that covers the totality of the fields.

Wind in the region, measured atop 30-foot towers, moves at a velocity of less than 6 miles per hour. Inside the plantation, under the canopy of leaves, the air does not move. The soil is very wet and when the sun warms the earth, the soil releases moisture into the still air. All day long, the temperature fluctuates little, remaining around 86 degrees Fahrenheit. At night, it drops to 76.

Scattered at specific distances from each other, small workers' family housing blocks, small communities with a "plaza," a grocery store and an elevated water tank which stores water from local deep wells, breaks the monochromatic landscape. Downward, toward the ocean, large and small towns flourish.

After each application of DBCP, in a particular field, the characteristic hydrocarbon odor of the poison is felt for days by everybody in these communities. The upwind neighboring communities also feel the vapors' unmistakable presence.

The manufacturers and the pesticide specialists classified DBCP as a "soil fumigant." Soil fumigants are active compounds which penetrate the soil and move through it as fumes, or vapor. After injecting a small emulsified amount in the soil, the fumes were expected to propagate around the injection point. As it happens, part of the poison's fumes propagated upward by itself or carried by water vapor, and part of the poison was carried deep into the ground by the rainwaters where it is trapped by the adsorption forces of the clay and sand.

Being only slightly soluble in water, the enormous amount of DBCP emulsion that was carried deep into the soil, contaminated the entire deep water supply with a small but constant proportion of the carcinogen. In all probability, it will take several decades for this extremely dangerous substance to disappear totally from the water supply.

The totality of water consumed by the banana plantation workers and their families, as well as that consumed in the near and down stream towns comes from deep wells.

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DBCP is a high density substance. It's specific gravity is almost twice that of water, a five-gallon can weighing close to 80 pounds. This poison evaporates quickly, it's vapor pressure is 0.8 mm of mercury at 68 degrees Fahrenheit and rapidly rises to twice that at 86 degrees Fahrenheit. If a container is left open or a small spill is left in an area with poor ventilation, the vapor concentration in the air reaches very dangerous concentrations in a short time.

Since the late 1950s, the chemists and toxicologists involved in production of DBCP for Dow and Shell Chemical Companies established the "human olfactory detection threshold" for DBCP as 1.7 ppm in air. The manufacturer also knew that 5 ppm during a few weeks was very toxic for all the different species of experimental animals tested. Internal manufacturers' documents indicated that this product should only be handled by workers using a respirator with bottled air, fitted with a pipe with air pumped from the outside, or with a respirator fitted with an approved canister to eliminate hydrocarbons.

During the decade of exportation and soil fumigation, information regarding the toxicity of this product was given neither to the workers nor to the Costa Rican health authorities.

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Once at home, the worker was frequently moody, feeling nauseous, with poor sex drive, and often impotent. The wife of one worker told me that in their small wood, very open house, when her husband urinated at night, after a day of applying DBCP, the characteristic odor of the poison rose from the urine.

The stronger, younger and more eager of the workers, and the ones in more need of extra pay, continued applying DBCP longer than the weaker, older workers.

Among many families with children of working age, the totality of male offspring were sterilized. In some cases, young boys who went frequently to the plantations carrying lunches and snacks for their parents and/or brothers, also grew up to be sterile. The injuries to children at prepubescent and pubescent age are much more severe than in adults. These injuries affected expression of the secondary masculine characteristics as in early castration.

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The Costa Ricans applying DBCP were victims of both acute and chronic exposure during widely different periods. Their injuries, therefore, may vary in degree and diversity. The acute injuries are mostly neurological and transient but, as the dose increases, permanent neurologic impairment and injuries to the skin, ovaries, lungs, kidneys and liver may develop, leaving scarring and reduced functional capacity. The very potent effect on the metabolism of spermatozooids and spermatogenesis may produce post-testicular impairment of fertility. Initially, many of these injuries are not noticeable without complex medical diagnostic procedures, and only become obvious as their severity increases.

DBCP is one of the most potent symthetic carcenogenic and mutation causing agents. Frequently, it is used as a reference substance to measure the carcenogenic and mutagenic potential of other chemicals. Due to the elusive nature of the epidemiology of cancer, mutations, and birth defects, our initial clinical impressions remain to be properly validated.

Chronic exposure to DBCP produces extensive injuries throughout the body, but the more dramatic occur in the testicles. The majority of Costa Rican workers with one hundred or more hours of accumulated exposure suffer testicular atrophy. Clinical evaluation shows "senile" type of testicles, the size and consistency reduced. After biopsy, the testicular histopathology shows very characteristic severe atrophic changes. The seminiferous tubules are empty and the entire spermatogenic cell line has disappeared. There is no germinal epithelium, and there is absolutely no hope for recovery. The laboratory tests show sperm devoid of spermatozooids, and the blood chemistry shows a permanent shift or displacement of the endocrine pituitary-gonadal axis, resulting in a constant increase in the follicle stimulating hormone as a physiological response to the absence of spermatogenesis feedback.

Many patients complain of impotence.

Of those few patients with less exposure, there is some production of spermatozooids, but the spermogram shows extensive pathological abnormalities. There is oligospermia reduced vitality, reduced random mobility, reduced directional mobility, and early spermatozooids death. The majority of spermatozooids show malformations. The total result is sterility.

In some patients there are variations in the pathology of the sperm and, occasionally, they may impregnate their wives. From a theoretical point of view, we may expect an increased probability of birth defects and mutations. As we know, most mutations are lethal to the fetus, and therefore are not detected.

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After ten or more years from the last exposure, in the vast majority of cases, the clinical picture of testicular malfunction has not changed.

The study of the workers' personalities, even by me, non-initiated in psychology, reveals deep and ugly scars, and sometimes a gaping wound. Their personal and family histories are filled with suffering and inferiority complexes. Many of them see themselves as half men. The conspiracy of the late 1970s and early 1980s to cover up the disaster was very effective. Only a few dozen of the workers understood partially what had happened to them. Many were told their condition was transient, and that it would respond to medical treatment. Many went on for years receiving "treatment," constantly embarrassed by "mandatory masturbation" in a medical office.

Due to legal actions taken in Texas and Florida by Costa Rican DBCP victims against Dow, Shell and Standard Fruit Company, the Costa Rican news media has extensively covered the problem, and former banana workers are just now discovering that their infertility is not due to a bad turn of nature or an act of God, but is the result of criminal acts committed by extremely greedy persons.

STERILIZATION OF WORKERS FROM PESTICIDE EXPOSURE:

CAUSES AND CONSEQUENCES OF DBCP-INDUCED DAMAGE IN COSTA RICA & BEYOND

by Lori Ann Thrupp

December, 1990

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This article is derived partly from the author's PhD. dissertation (The Political Ecology of Pesticide Use in Costa Rica: Dilemmas in the Banana-Sector of Costa Rica), based on field research in Costa Rica during 1984-87. The study was financed by a Fulbright Scholarship and a National Wildlife Federation Scholarship. Investigation on the case was continued (in collaboration with the workers and lawyers) during several months of 1990.

STERILIZATION OF WORKERS FROM PESTICIDE EXPOSURE:CAUSES AND CONSEQUENCES OF DBCP-INDUCED DAMAGE IN COSTA RICA & BEYOND

by Lori Ann Thrupp

ABSTRACT

Public health hazards from the use of agricultural pesticides have received increasing attention in developing as well as industrial nations. This article examines a remarkable case of massive sterilization of approximately 1500 workers in Costa Rica, due to exposure to a toxic nematocide called DBCP (1,2-dibromo-3-chloropropane), applied in large commercial banana plantations. Although the product was used during the 1970s, sterile victims have continued to be diagnosed through the 1980s. The effects include psychological trauma as well as permanent infertility. The case has international repercussions because several workers have filed law suits against the U.S.-based transnational DBCP manufacturers, and because DBCP use was continued during the 1980s in other developing nations. The article analyzes the causes behind this serious impairment. It is argued that the contributing factors include not only biomedical processes and technical dimensions (ie, how DBCP was used), but most importantly are political-economic factors which explain how and why DBCP was used despite the severe hazard. The crucial determinants pertain to the dominance of short-term profit motives, and the control over information and technology by the manufacturers (who concealed early toxicological research evidence of the reproductive hazards) and by the managers of the banana producer-companies. This case well-illustrates problems and injustices from labor exploitation and resource extraction from transnational agro-industries. The conclusion of the article briefly summarizes policy implications from the case.

STERILIZATION OF WORKERS FROM PESTICIDE EXPOSURE:

CAUSES AND CONSEQUENCES OF DBCP-INDUCED DAMAGE IN COSTA RICA & BEYOND

by Lori Ann Thrupp

Introduction

There is growing concern about the adverse effects of pesticides on public health and in the environment. While consumers in North America worry about risks of residues in foods, many agricultural workers in Latin America are concerned about direct damages to their health and well-being from the increasing use of pesticides exported from the North. A case which explicitly illustrates profound human degradation from agrochemicals has emerged in the banana-growing region of Costa Rica, where approximately 1000 workers have been sterilized permanently as a result of exposure to a toxic nematocide called DBCP (1,2-dibromo-3 chloropropane). This product was used heavily in Central America during the 1970s, mainly on the banana plantations of US-owned transnational fruit companies, in order to earn profits for the agro-industry and to provide bananas to consumers in the North. However, use of this product has left a legacy of despondency and despair which continues up to the present day among the victims who applied it. The situation also has far-reaching international political-economic implications, analogous to the Bhopal tragedy (though on a smaller scale), in part because approximately 350 of the sterile workers have sued the transnational pesticide firms which produced DBCP.

This article examines this case and highlights the chronology of events and causes leading to sterility. The analysis challenges superficial explanations that blame the problem on the workers for not using protective equipment. It is argued here that the causes are not only biological factors and technical matters (ie, how the DBCP was applied), but most importantly are political-economic and social factors – particularly "gaps" and concealment of information and the dominance of profit interests. These determining factors are tied to the power and control over technology, information, and resources of transnational pesticide manufacturers and of the directors of the fruit companies, along with the influence of state officials.

Part A provides a brief background on pesticide use and banana production in Central America. Part B then presents evidence of the DBCP problems, and in Part C, the causes of this damage are analyzed in depth. Finally Part D discusses responses by the users and the government, and suggests implications for preventing such problems. The analysis is based on field research in Costa Rica, which included detailed interviews with workers, physicians, banana company managers, pesticide firm representatives, policy officials, and lawyers; examination of correspondence, import/export data, and medical records; a survey of 35 of the victims (see Appendix A); and a review of supplementary published studies.

This case not only exemplifies poignant personal crises and morally-disconcerting problems, but

it also manifests the exploitation of "human nature" by transnational capital in a hierarchical industrial-agricultural enclave. The dilemma well-illustrates complex interactions between international technology transfer, Third World resource exploitation, and public health, and social injustices.

A. BACKGROUND ON PESTICIDE USE IN BANANA PRODUCTION IN COSTA RICA

Since the 1950s, the use of chemical pesticide has accelerated in Central America, as in much of the developing world (1-6). The growing use of agrochemicals has coincided with changes in agrarian structures and has responded to the penetration of the transnational chemical suppliers. Many types of farmers have adopted pesticides, but the greatest use (in terms of total volume and value) is in large-scale monocultural agroexport plantations of cotton, bananas, coffee, and sugarcane (2,5). In Costa Rica, banana producers use by far the largest proportion of the national total, accounting for 25-30% of the annual total value of imported pesticides (2). The large commercial plantations, owned mostly by three transnational companies (TNCs), are highly susceptible to pest problems, and the producers use heavy prophylactic spraying of numerous kinds of pesticides (ie, herbicides, fungicides, and nematicides), whose costs account for 50-55% of total costs of material inputs (2). These chemicals are applied in highly systematic, standardized, and centrally-planned methods, coinciding with the general sophisticated system of production which is organized hierarchically and rigidly for maximizing efficiency, yields, and quality of bananas exported to the U.S.

Pesticide use has undoubtedly contributed to agricultural production and is important in providing blemish-free products demanded by supermarkets and consumers. However, it has many kinds of adverse effects; and the benefits and costs are distributed inequitably. The main problems are exceedingly high costs for imported products (draining foreign exchange), agroecological problems such as resistance and resurgence, persistence of pesticide residues in the environment, and chronic health problems and poisonings (totalling approximately 3000 annually in Central America, and 800 annually in Costa Rica) (2,3,5). These problems are underreported and often overlooked.

In Costa Rica, the incidence of health problems from pesticide use is highest in the banana-growing regions of Costa Rica, partly because of the heavy use and the constant worker exposure in banana plantations (2,3). Pesticide poisoning is also one of the most common occupational health problems on plantations. Detailed data for the banana sector is not available, since the companies' medical records are confidential. However, banana managers and hospital reports confirm that acute poisonings from nematicide exposure have occurred frequently through the 1970s and 1980s. There are an estimated 250-300 poisonings annually in the banana sector, which affect workers, not managers or supervisors (2). This number accounts for about 30-33% of the total national poisonings, even though the population in the sector is less than 5% of the nation's rural population. The poisonings usually occur in clusters. For example, in 1987 during one week alone, there were 70-80 severe poisonings of workers in Rio Frio and Estrella, from exposure to a carbamate nematicide called Temik (2). All of these workers suffered acute systemic effects, including severe vomiting and dizziness, and had to be rushed to the hospital.

The costs of medical treatment are borne mainly by the National Insurance Institute (INS) (which

is the country's nationalized health insurance company), since employees are usually covered by the banana companies' insurance policies. The banana companies do not suffer direct economic losses from absence of poisoned workers, because substitute workers are available; the unemployment rate is high in the region.

Besides this, workers are affected by other kinds of chronic effects from pesticides such as dermatitis, eye problems, and respiratory disorders; many of these problems are not reported (2,3,4). The most alarming long-term health problem from nematocide exposure is sterility – the focus of concern here.

C. THE CASE OF MALE STERILITY FROM DBCP USED IN THE BANANA SECTOR

1. Dimensions of the Damage

As of mid-1990, approximately 1500 male workers from the Atlantic banana-growing region of Costa Rica had been medically diagnosed as being infertile as a result as exposure to the nematocide DBCP (7). This suggests a remarkably high incidence of 20 - 25% of the banana workers in this zone; no managers are known to be affected.

DBCP is known to be "a testicular toxin in man" as well as a carcinogen (8,9,10). That is, medical investigations by the Occupational Safety and Health Administration (OSHA), the Environmental Protection Agency (EPA), and by many individual physicians, published since 1977, show that this product causes depression in sperm and testicular dysfunction (8-13). DBCP-induced sterilization has occurred to approximately 250 - 300 men in other parts of the world (besides Costa Rica), mostly among men who worked in DBCP-formulating plants, mainly in the United States, Mexico, and Israel (14,15). However, the magnitude of the problem in Costa Rica is unprecedented and unique globally.

The first cases were diagnosed in Costa Rica in 1977 - 1978, and victims have continued to emerge up to the present day. The exact number of affected people is not known due to the lack of systematic record-keeping by the National Insurance Agency (INSS). Evidence of the problem has been confirmed through analyses of semen, called spermograms, which indicate numbers, volume, motility, and shape of cells. A normal quantity of sperm cells ranges between 20 and 250 million per cubic centimeter of semen, but about 60-70 % of the total sterile victims are azospermic (with absence of sperm), and the rest are oligospermic (ie, less than 20 million per cc) and are also unable to engender children (16 - 20).

Studies have shown that all of these men are banana workers who applied DBCP during the 1970's, mainly from Standard Fruit Company's plantations of Rio Frio and Valle de Estrella (16 - 20). The years of use were 1971-1978, even though most of the affected workers did not seek diagnoses until the 1980's (16). A study was undertaken in 1979 by microbiologists in 1979 on the first 72 sterile workers who had come to the clinic in Rio Frio (21). The analysts obtained records from Standard on the estimated hours of exposure of these men; and the results showed that sterility was positively correlated with high time of exposure. It also showed an inverse relation between hours of exposure and sperm count; ie, the more hours exposed, the lower was the sperm count. (These preliminary findings are shown in Appendix B.)

Most of the victims have additional symptoms and damages. For example, many have abnormally high levels of Follicle Stimulating Hormone (FSH), according to medical tests, which indicates considerable testicular damage. Many of the men have levels up to three times the normal, which is between 0 and 20 International Units/liter (20). Furthermore the sperm of these patients usually have reduced motility and appear immature. The azospermic workers usually have atrophied sperm-producing cells (germinal epithelia), which is known to imply irreversible damage. No cure is known (22-24). These effects also help confirm that the cause is from DBCP; other causes of sterility, such as venereal diseases, do not produce these symptoms (20,22). The incidence of DBCP-caused sterility far exceeds that of any other cause of sterility in Costa Rica (19,20). It appears that some of the oligospermic workers can possibly recuperate fertility with time; however, they face the risk of having children with birth defects.

Some INS officials suspected that a few of the cases were fraudulent, and that they tried to show fake evidence of oligospermia in order to receive compensation (23). The physicians verify that some dishonest attempts were made initially (eg, not following doctors' orders to abstain from ejaculation prior to giving a sample). However, they were able to detect and circumvent fraud, because: the doctors have interviewed the patients to ensure honesty; at least three spermograms are taken at separate times; sperm samples must be given by the patients in the doctors' offices; and, finally, testicular biopsies were done on many of the victims, which gives undeniable confirmation (20).

Physicians also confirm that the number of cases recorded so far does not reflect the true magnitude of the problem, and that the total could actually include more than 1000 additional undiscovered cases (19,20,22,23). Those still unreported include not only banana workers, but also men who used DBCP in other parts of the country and who still are unaware of the problem, since DBCP was used to a lesser extent in other crops during the 1970s. The main reasons for underreporting are: a) the men are often embarrassed or ashamed to admit they are infertile; b) the man's problem may be unrecognized, partly because couples believe that the woman is infertile; and c) men who realize they may have a problem are often reluctant to go to doctors for an analysis, because it requires masturbation in a doctor's office, which is often seen as humiliating and/or shameful; d) many men who no longer work for the banana company can not afford to have medical examinations and are not covered by medical insurance.

2. Consequences, Costs, and Responses in the DBCP Case:

The main effect suffered by all of the victims is the inability to engender children. Beyond this, the dysfunction has provoked other emotional and psychological effects, including mental depression (in over half) and impotence (14,19,20,22,23).¹ It has adversely affected their personal lives and has contributed to divorces and separations for some of the workers. Details on the effects were acquired in systematic interviews of a group of 35 workers (who were the first to file laws suits), as explained in Appendix A. For example, of the workers surveyed in 1988, 26.5% reported being divorced because of their sterility (17). Many have been ridiculed by other men and have encountered difficulties being accepted socially. An estimated half of the workers have left Standard Fruit for various reasons

including depression and anger about the problem. Most of them did not have children before exposure to the product; thus, being childless has been traumatic for the men and their spouses. As one victim stated, "I am not only mourning my personal loss of the son I could never have... This damage is a loss to society of a whole generation of people."²

Since most of the workers are covered by Standard's insurance policy, INS has borne costs of medical exams. Many victims have sought compensation from INS as well. When the cases first emerged, INS officials were uncertain about whether and how much to compensate the workers, mainly because of the newness of this problem. Costa Rica's Labor Risk Law does not include sterility as an impairment which merits compensation, but only refers to loss of testicles. Therefore, the doctors stretched the interpretation of the law and compensated azospermic workers. However, INS officials wanted to find out if oligospermic men could regain fertility; so workers were required to wait two years to confirm infertility before being paid (23).

Compensation payments from INS were granted to approximately 500 workers by 1988. Each payment is calculated using a mathematical formula, based on the worker's annual salary and the percent incapacitation judged by INS doctors. Exact figures remain confidential; but in general, individual compensation payments span a large range from U.S. \$500 to \$2000, depending largely on their salary levels (25).³ Some of the oligospermic workers are still hoping to receive compensation, but must still wait for further medical exams. Therefore, this problem has cost INS a total of probably over a million dollars, which is financed partly by the banana companies' insurance premiums.

Some of the workers have been dissatisfied with the amounts of compensation and have tried to claim higher payments from INS, with little success. In 1982, one of the toxicologists involved in the investigation helped the workers seek legal aid from a law firm in Dallas, Texas (Baron and Budd), which specializes in occupational health (22). After consultations, this firm agreed to represent the workers and collaborated with a Costa Rican law firm and scientists to undertake investigations. In 1985, 180 affected workers filed law suits against the US-based pesticide firms, Dow Chemical Company and Shell Oil Company, which produced and exported the product DBCP, whom the workers claim are responsible. During 1985-1988, the lawyers appealed to courts to hold the trial for the case in the United States. But, the jurisdiction was contested by Dow and Shell and the workers' appeal were dismissed by three US judges, who argued that the trials should be in Costa Rica, not in the US, because of the foreign location of the incident (14).⁴ In March 1989, a Texas judge granted their appeal, but Dow and Shell lawyers again contested this decision. Finally, in late March 1990, the Texas court announced a final decision to allow the trials to be held in Texas (27). This constitutes a notable preliminary victory for the Costa Rican workers and their lawyers; and the decision itself is unique in the legal history of the U.S. If the workers win the law suit (which will probably require many years of litigation), the payments could be very high, and the financial impact on Dow and Shell could be debilitating. U.S. workers sterilized by DBCP have received over \$4 million each as a result of winning law suits against Dow and Shell (15,26).

In spite of this hope for a positive legal outcome, the ongoing investigation for the law suit

involves a long and arduous process. The TNCs continue to appeal and lobby against the Texas court decision to allow the case in the US. Moreover, it is very difficult to place monetary values on this kind of damage and to evaluate these social costs compared to the benefits of DBCP. In Latin America, male virility has a very high social value, so the loss of fertility has profound social and psychological implications, representing immeasurable effects. Numerous workers interviewed have said, "no amount of money could substitute for what we have lost" (27). In addition to debilitating the workers, the DBCP issue has led to actions by the government, Standard Fruit, and others, which are discussed in Part D.

C. CAUSES AND EVENTS LEADING TO DBCP-INDUCED STERILITY

How and why did DBCP sterilization occur in Costa Rica? It is suggested that there are multiple interlinked causes. Analyzed below are the biomedical factors, the technical factors (eg, how DBCP was used), and finally the determining socio-economic factors and events which contributed the problem.

1. Biomedical Factors Explaining DBCP Sterility (24,16)

Complex biomedical processes underlie DBCP sterility: DBCP enters the bloodstream when it is absorbed through the skin and through the lungs. When deposited by the blood cells in the testes, it damages and destroys the spermatogenic cells (for reasons which are not fully understood). Over time, this results in atrophy of the cells that produce the sperm and reduces numbers and motility of the sperm, accounting for infertility. In addition, after this testicular damage occurs, the FSH level rises abnormally because the absence of sperm does not allow for the production of the feedback hormone called Inhibin, which interacts with the secretion of FSH in the pituitary gland. Normally, when the testicles have produced sufficient sperm cells, the hormone system has a feedback process which indicates that the pituitary gland must stop producing FSH; but the DBCP damage impedes this normal process, as depicted in FIGURE 1.

Although the specific feature of the biomedical processes are important, the explanation of the problem requires looking beyond medical dimensions.

2. Technical Factors Contributing to the Problem

The main technical factors which contributed to sterility are: a) the type of pesticide and b) the exposure level, which depends on what was worn, the application method, and the amount/time used.

The chemical characteristics and toxicity of DBCP are unique and important in explaining the problem. DBCP is a highly effective, mobile, and persistent nematicide, consists of 84-86% active ingredient, and is a clear flammable liquid with a pungent odor. Its vapor pressure is 8 mm Hg/21 C, and it is 1000 times more volatile than other nematicides available and is therefore easily inhaled. It is not known exactly how DBCP works to kill nematodes (15). Some scientists believe it prevents nematodes from eating, and others say it prevents them from reproducing. According to manufacturer's product data, DBCP's Oral toxicity (LD-50) is 170 - 300 mg/kg of body weight (male rat); Dermal toxicity (LD-50) of 1420 mg/kg (rabbit) (8,9).⁸

Although these intrinsic characteristics of DBCP help to explain its health hazard, these features cannot be viewed in isolation, because the effects also depend on how it is used - ie, the level of the users' exposure to the product. In this case, the Costa Rican workers' exact exposure in parts per

million (ppm) are not known. However, exposure depends on: means of protection, method of use, and amount/frequency of use. An overview of these three factors below shows that the workers had very high exposure to DBCP.

First, none of the workers wore protective safety equipment (such as respirator masks, overalls, and gloves) during applications; and similarly, they did not use safety precautions, such as avoiding spills and washing after work (17,18,20,23). (See results in Appendix A as well.) Most wore average leather or canvas shoes or work-boots and average cotton workclothes. INS blamed the workers for not wearing safety equipment as the major cause of the problem (18). However, this placement of blame is naive and erroneous, because these DBCP workers were not provided safety equipment or precautions by the Standard Fruit Company. Furthermore, according to occupational health specialists, although reproductive damage theoretically could have been reduced if high-quality impermeable gear had been worn (28), sperm depression would not have been eliminated, because of DBCP's inherent potency and the workers' long time of exposure; and it would be extremely difficult for workers to wear impermeable safety gear in the tropics anyway, because it would cause heat stroke (28,29).

Second, the method of mixing and applying DBCP allowed high exposure. Each worker applied DBCP using a manual "injector" tool called a Kyoritzu, imported from Taiwan, which is shown in FIGURE 2. It had mainly metal parts, including a long body and neck, a handle, and a pointed nozzle, along with a small plastic tank (holding about 2 liters). The applications were carried out by teams of 4-6 workers and one team-captain, following orders of the central production managers from company headquarters. The captain supervised the other workers and mixed the DBCP solution, usually aided by the workers in his team. They mixed 1 gallon of concentrated DBCP with 4 gallons of water in large capped plastic containers called "pichingas," (which are like water/fuel jugs). The workers carried the pichingas on their shoulders to the application area; and often the caps leaked and the plastic was corroded, enabling the product to spill onto workers' clothing and skin. The pichingas were hooked on wire cables throughout the plantations, and pushed along the cable during the work day to assigned areas. 30-35 liters of concentrated DBCP per hectare were mixed and applied, in specified circular patterns around each plant. Each team covered about 3 hectares per day. The workers noticed that DBCP had "penetrating" fumes, and a very strong odor which was repulsive to some. They report that DBCP usually felt "hot" or stinging, but did not cause great pain (thus preventing their suspicions of negative effects).

To carry out the standardized applications, the workers poured the liquid from the pichingas to the injector tanks; inserted the injector 18 centimeters into the soil in 20 - 25 holes around each plant; and released 5 ml of the DBCP in the soil by pressing a button in the handle; and after removing the injector, pushed the soil over the hole with their feet. They also had to refill the tank every 20-30 minutes - ie, many times each day. In sum, these procedures meant that the workers continually inhaled DBCP and contacted the DBCP through their hands, arms, legs, and feet. Exposure was also increased because the workers often adjusted the flow of DBCP by wiggling the nozzle when it became clogged by soil, and because the injectors developed leaks, but they repaired and reused them (17).

Furthermore, when the soil was hard or rocky, the injector point frequently did not penetrate fully into the ground; and thus the liquid "backfired" out of the tool/nozzle, and contacted the workers' bodies. Those who mixed the product usually had even more respiratory and dermal exposure than those applying it, and thus had worse damage from DBCP (16,20).

A third technical factor influencing the workers' exposure (and therefore the sperm level) is the frequency and amount of DBCP use, i.e., the total hours of direct exposure. The work teams applied DBCP throughout the year, except for a period of 2-3 months. The amount of time that each worker spent on this job varied, depending on the work schedule ordered by central management and on production requirements. Usually, each worker applied DBCP two to four days per week (eg, 54% of the workers in the survey); but many applied it daily (eg, 46% in the survey), for 6-8 hours each day (17). During the 1970's, the same men were consistently employed in this job throughout the year. They also did other production tasks (such as trimming, fertilization, and weeding) which were alternated with DBCP application; but the affected workers were exposed to DBCP for hundreds of hours and in some cases thousands of hours. 4500 hours was one of the highest numbers of hours estimated for a worker (16). This prolonged time facilitated continual inhalation and contact with the product; the longer time using it, the worse was the damage.

The total volume used by each worker is another way of expressing the high exposure level, but precise individual measurements are not available. Each day, each applicator handled several dozens of liters; and each captain handled hundreds of liters to mix and fill the drums. The total amounts used by Standard in Costa Rica, shown in TABLE 1, also indicate the large quantities to which all the workers were exposed. The grand total amount of DBCP used in Costa Rica was estimated at 5,357,554 kilos between 1963 and 1979 (16,18).

A different application method - mixing DBCP in the irrigation system - was used in some of Standard's other plantations and by most other banana companies. The irrigation method was a closed system, which involved less worker exposure than the injection method (although more contamination of rivers and creeks). This difference partly explains the high incidence of sterility in Rio Frio and Valle de Estrella compared to the incidence in other plantations (2).

3. Socio-Economic and Political Factors and Events Leading to the Problem

Beyond the medical and technical factors, it must be explained why DBCP was used in this manner. This section discusses chronologically the crucial background events and causes leading to the problem, which pertain to political-economic pressures. The events are summarized in TABLE 2.

a. Early R & D of DBCP: Responsibilities of Shell and Dow (15,26)

DBCP was discovered and first tested in 1951-52 independently by U.S.-based TNC's, Shell and Dow Chemical Companies, competitors and co-pioneers in nematocide research. At this time, researchers in each company found that DBCP was highly effective for nematode control, nearly 20 times more effective than the most popular nematocide called D-D used at that time. Both companies were interested in marketing it. In order to meet federal requirements for product registration, Shell and Dow scientists began toxicological studies on health and environmental hazards in 1954-55. The

toxicologists directing these early studies were Dr. Ted Torkelson for Dow and Dr. Charles Hine for Shell.

Following usual procedures for toxicology testing, laboratory animals were exposed to the chemical using different doses and the effects were monitored, to determine the lethal doses (LD-50 levels) and hazards. Autopsies were performed on the animals after they died or the experiment ended, to check changes in weight, blood chemistry, and organs. Results from both labs showed that DBCP was very toxic, producing significant organ changes to test animals at relatively low doses, which were interpreted by the analysts as "surprising" (15). Even at low doses (5 ppm) rats had retarded growth, organ damage, and undersized testes. At 10 ppm exposure, all but one of the surviving rats had testes half the normal size; At 20 ppm, the surviving rats were completely sterile; and at 40 ppm, all rats were dead (30). Further experiments were done to confirm results, and the lab groups began to collaborate in the testing.

Before the toxicity tests were concluded, both companies began to manufacture DBCP. Shell began production in 1956, using the trade name Nemagon, and Dow started in 1957, using the name Fumazone. They told the manufacturing plant managers that DBCP was "moderately toxic" if inhaled or eaten, and "slightly toxic" if absorbed by skin. After disputing over patent rights for DBCP, in 1957 Shell and Dow formed a cross-licencing arrangement, which gave the companies exclusive control of DBCP manufacture and sales. They also began farm demonstrations to show its effectiveness.

Meanwhile, tests were continued. Dow's lab group found damage at the lowest dose tested - 12 ppm - as did Dr. Hine at 5 ppm (31). Neither of the research groups tested to the "no-effect" threshold level, even though testing to this level was an expected part of toxicological research to establish safety margins for human exposure. This means they did not know the highest dose an animal could absorb without harmful effects. Nevertheless, the scientists made an estimation, suggesting that workers' safety level should be one ppm. In April 1958, Dr. Hine gave Dow managers a confidential report which included the above-mentioned findings, and also stated: "among the rats that died, the gross lesions were especially prominent in lungs, kidneys, and testes...Testes were usually extremely atrophied" (31).

Later, in July, 1958, the Dow group prepared another report that was circulated to management personnel inside the company. As well as including data in Hine's April report, this summary provided further data, such as: "exposure tests on rats, rabbits, guinea pigs, and monkeys showed that inhalation of 12 ppm DBCP over a course of 50 - 60 seven-hour days killed nearly half the animals, reduced numbers of sperm cells and testicle size, and created liver and kidney damage" (quoted in 15). The report concluded, "Liver, lung and kidney effects might be expected... Testicular atrophy may result from prolonged repeated exposure." Despite these alarming findings, Shell and Dow managers decided not to do further testing and continued marketing plans. Dr. Torkelson was appointed to summarize both companies' results in an article which was published three years later, in 1961, in the Journal of Toxicology and Applied Pharmacology (32). The article reviewed health effects on experimental animals, including the testicular effects in rats. It also included recommendations: "the concentration of DBCP in the workplace should be kept at one ppm; the warning odour (at 1.7 ppm) must not be ignored...

Formulator workers should wear full-face gas masks equipped with vapour canisters, and protective clothing impermeable to the material"(32).

This academic article became available in libraries of North American universities and scientific institutes. However, it was not used for Shell and Dow's product data summary which was to be provided to their customers. In order to prepare this public summary, Dr. Hine was hired by Shell in 1960. His draft report contained some of the same facts included in the journal article, but it reduced the details on the adverse effects. Dr. Lykken, Shell's technical services director, reviewed the draft report, and advised changes to understate the hazards and to exclude some of the toxic effects and safety precautions. For example, remarking on Hine's observation that repeated exposure could have an effect on the human reproductive system, Lykken wrote, "Do not extrapolate. Leave out speculation about possible harmful conditions to man. This is not a treatise on safe use"(33). He also advised Hine to delete references to the need for further DBCP testing. His suggested changes were made in the public product summary, therefore minimizing the actual effects and precautions. This summary was then given to customers and to public officials. It noted risks of skin and eye irritation, but did not mention organ damage such as testicular dysfunction. The only mention of safety precautions was a suggestion for formulator workers in closed areas to wear respirators.

In 1961, Shell and Dow together submitted Hine's report to complete the registration process and to obtain approval from the US Department of Agriculture (USDA) for labels. A few USDA officials were not satisfied by the minimal warnings proposed by Shell and Dow. They wanted more strict warnings to be included on labels, and also demanded more data on skin toxicity and health effects. Shell managers expressed their opposition to the USDA views and refused to meet all the demands. Finally, in 1964, the USDA officials relented to the companies' appeals, and registered Nemagon and Fumazone, with labels containing mild safety warnings. The harshest label warnings were "Do not breathe vapors," and "Use only in well-ventilated areas" and "do not contact with skin and eyes." It also omitted the recommendation to keep air concentrations below one ppm and to wear safety protection (33).

This label discrepancy was unknown to users. DBCP sales grew rapidly and successfully for Shell, Dow, and later for other manufacturers who marketed it after the patent expired. DBCP became popular for its effective nematode control, aiding farmers throughout the world.

b. Background on Standard Fruit's Use of DBCP

In 1966-68, the Standard Fruit Company began experimenting with DBCP and other nematicides in banana plantations in Costa Rica and Honduras, aiming to combat nematodes (*Radopholus similis*) which had caused production losses of up to 25-35% in some areas. Field trials were carried out to compare the efficacy of several products including DBCP, Mocap, Nematicur, Terracur, and Lannate. Independent studies done at this time (such as one from the Cameroons) showed DBCP was less effective in bananas than the granular products. But Standard's trial results showed that DBCP was the most profitable (ie, cheaper by 40-60%) than other types, if applied frequently (34). In the trials, "toxicological analyses were not undertaken on the potential effects of these chemicals on users' health or in the environment... We [Standard personnel] did not consider such factors at all at that time... While

working, all of us [ie, researchers and workers] never used any kind of safety equipment in those days..."(35)

Subsequently, in 1969-70, Standard began to incorporate DBCP on a commercial scale in all of their plantations. Standard managers negotiated and signed contracts with Dow to establish terms for purchasing the large volumes at the lowest possible prices. The contracts obliged Standard to buy a particular quantity of DBCP for 1 - 3 years, and were renewed through the 1970s. Following usual procedures for all pesticide sales, Dow sent the Standard directors the typical product summary for DBCP customers. The directors sent this information and the labels to the materials' manager in the San Jose office (and to division offices in other countries).

Through the 1970s, in Standard's Rio Frio plantations in Costa Rica, DBCP was applied using the injection method described previously. Application techniques and schedules were prescribed by central managers, as written in the "Production Manual," then were sent via memos to managers in Costa Rica's main office, and then to field superintendents, who then gave orders to team captains and workers. The workers did not see written information about the products. (Product information was in English, so was not understandable to the Spanish-speaking workers anyway.) During this period, the DBCP applications continued regularly, as one of many standardized processes of the banana industry.

There is no evidence that Standard managers sought additional information on toxicity effects beyond that provided by the firms. DBCP exposure levels were not monitored to check if the workers needed safety gear, since monitoring was not part of the company practices. DBCP application rules in Standard's Production Manual from 1970-77 did not advise safety gear and precautions for workers (36). Supervisors, physicians, workers, and scientists said that no safety equipment and no warnings about the risk were provided until 1978 (37). An occupational health expert of INS also confirmed, "none of them-- workers, captains, and field managers -- knew about the hazards and the necessary precautions for handling DBCP* -- which contributed to the adverse outcome (23).

During 1975, Standard purchased DBCP at a lower price from an Israeli supplier, called Dead Sea Bromine Company. This brand of DBCP, named Nemabrom, was sent as a non-emulsifiable active ingredient, and had to be mixed with diesel rather than with water. This product was used during 1975-76 in Rio Frio and near Siquirres. However, this toxic mixture severely damaged the banana plant roots, causing plants to collapse in several hundred hectares. Consequently, the area was left in fallow for a couple years, and was later replanted and used for banana production, after the diesel dissipated into the soil. Standard therefore stopped using the brand Nemabrom. The health hazards to workers from this DBCP-diesel mixture have never been analyzed; it could be more noxious than DBCP mixed with water (28).

Standard thus continued using Fumazone through the late 1970s; and workers and field managers did not suspect it would have adverse effects.

c. Workers' First Signs and Doctors' Curious Findings (17,19,20,22)

Then, beginning in early 1977, several dozen workers (of child-bearing ages) from Rio Frio began to experience problems of infertility, even though they were trying to have children with their partners.

These men did not know the cause of the problem. Their wives were examined medically, and were found to be normal. Several men consulted a urologist, Dr. Dominguez, in the Hospital Calderon Guardia in San José, who did spermogram analyses. The results confirmed that the patients had abnormally low sperm counts and were sterile. However, at that time the doctor did not know the cause. When interviewed in 1988, he said that he was "curious about the cases at that time, because they were very unusual and all came from the same place" (19). At this time, several other workers consulted a doctor in the Rio Frio clinic regarding the same problem; independently, this doctor found the same kinds of results, and also did not know the cause. During this period in 1977, as expected, the patients and doctors did not give information to the public about the problem. Most of these workers began to suffer from shame and depression.

d. Information From the U.S. and Subsequent Responses:

In July 1977, completely independently, information and events emerged publicly in the United States pertaining to DBCP: 35 out of 114 workers in the Occidental Chemical Plant in Lathrop, California were proven medically to be sterile as a result of exposure to DBCP (Fumazone) while working in the manufacturing process (38-40). After this news was released and investigations were made, DBCP was banned in the State of California in August 1977. In addition, the Environmental Protection Agency (EPA) and Occupational Safety and Health Administration (OSHA) studied the cases; and in late August a federal law was passed banning DBCP use in all leafy vegetables and some fruits. It permitted DBCP use in pineapples and bananas in Hawaii under restricted conditions, such as requiring users to wear high-quality safety equipment. The manufacturers of DBCP also had to change label warnings and toxicity data for customers.

Information on this new restriction and the scientific findings of the EPA and OSHA were written in a report and sent to DBCP users and manufacturers in the U.S. One of the study's findings was that exposure limit should be 10 parts per billion, which is 1000 times less than the 1 ppm that Dow and Shell originally recorded. Other figures in the report were: DBCP field applicators have far less exposure and far less risk of damage than DBCP manufacturing factory workers (estimated at .001); and the risk could be reduced 90-95% with use of protective equipment such as respirators and polyethylene overalls. [However, later, these EPA judgments of risk have been refuted by the facts that: a) The EPA figures were based on theoretical risk models, and did not consider exposure levels in actual farming situations (as in Central America); b) use of high-quality safety gear, such as polyethylene clothing, in hot tropical areas is dangerous because it would cause heat stroke (28, 29).

This new law did not prohibit the export of DBCP to developing countries, because according to the U.S. Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), DBCP could still be exported, as long as the U.S. government notified foreign governments and importers of the new law (41). Therefore, the EPA sent information on DBCP to other countries, including Costa Rica.

Following the emergence of this news about DBCP damage in the U.S., Shell and Dow ceased producing DBCP and alerted their customers and the press about the hazard. Dow wrote and distributed a report called "Dow's Reaction to DBCP," which summarized the emerging evidence, yet still

held to its claim that one ppm exposure was legitimate. About 80 other small manufacturing companies ceased to produce DBCP as well; and only a few companies in the world continued to make it. However, Dow and Shell still had DBCP stocks which it could sell to foreign customers.

e. Standard Managers' Response to Information from the US

In late July 1977, Dow informed the central directors of Standard Fruit of the California DBCP incident and also sent updated news in early August. During this time, Dow managers said they wanted to halt all supplies and to wait for test results from the EPA. Standard directors, however, were eager to continue DBCP use; and they responded to Dow by writing "your halt of shipping our outstanding orders is viewed as a breach of contract" (42). Their view of urgency to continue using DBCP was expressed in several internal memos. For example, one manager stressed keeping "pressure on" to obtain whatever DBCP possible (43). Unlike the competitor, United Fruit, which ceased to use DBCP at this time and switched successfully to Furadan or Nemacur, Standard managers chose to use DBCP, placing priority on profit/production goals and disregarding the hazard.

In mid-August, Standard's director in U.S. headquarters sent a memo to managers in all divisions about the issue. This clarified Standard's reasons for continuing DBCP, mainly stressing fear of economic losses if a switch were made. Therefore, after meetings were held among managers, Standard continued using DBCP as usual and tried to obtain the remaining DBCP in the U.S. In late 1977 and again in 1978, Standard bought DBCP from Israel and Mexico (Nemabrom and Spandec DBCP) while Dow did not market it.

In the autumn, Dow relented to Standard's pressures, began to negotiate again, and made plans to resume supplies, advising Standard to use strict safety precautions. In October, some of Dow's technicians went to Standard's Honduras plantations, where DBCP was applied by irrigation, to study workers' exposure levels to DBCP and to advise safety measures; but they never went to the Rio Frio plantations. Also at this time, in October, hearings were held in California on the sterile U.S. workers and on the background of DBCP studies. The hearings revealed the responsibilities of Dow and Shell in the toxicology research, particularly the role of Dr. Hine and the suppression of information. In this hearing, Hine admitted, among many things, that "it was stupid not to test to a no-effect level... and I think we should have gone to a no-effect level" (15). He thus admitted his "error" in judgement, but blamed the state for regulatory ineptness. After this, the California victims filed law suits against Dow and Shell, on the grounds of concealing information on DBCP hazards. It is not known whether Standard's banana managers received information on this hearing; but it is clear that the banana workers never heard about this situation.

In November, Standard's director sent another memo to top-level managers, emphasizing "sensitivity" and confidentiality of the issue. To justify the continued use of DBCP, he stressed: a) the economic urgency of using DBCP; b) DBCP was still permitted in pineapples in the U.S.; c) the EPA claimed there is a low risk of sterility in pineapple field workers; d) the risk could possibly be reduced with protective equipment (44). In late 1977, and in 1978, Standard managers signed new contracts for purchasing DBCP from Dow and Amvac, another supplier from the U.S. The contracts included an

indemnity clause, absolving the suppliers of culpability if adverse effects resulted from DBCP use.

The price of DBCP had more than doubled in this year (rising from about \$4.65 per gallon in early 1977, to about \$12.00 in 1978). Dow's contract agreed to continue supplying DBCP until October 1979. Dow and Amvac also strongly advised the use of safety precautions for the DBCP workers, and sent safety handbooks, which Standard directors distributed for the first time to division managers. Safety equipment was purchased in 1978, many months after the U.S. law was passed, but according to an internal memo by one of Standard's managers in late 1978, the equipment still "was not used" throughout 1978. Meanwhile, Standard tested other nematocides and found that alternative products were equally or more effective than DBCP, but still slightly more expensive. Yet, the directors still insisted on continuing to use DBCP.

f. Local Doctors' Discovery and Responses of Government & Standard

In the meantime, during 1977 and 1978, entirely independently and unaware of these events, additional workers in Rio Frio had experienced problems of infertility. About 20 - 30 men were found to be sterile by Dr. Dominguez. In 1978, 52 more in the Clinic of Rio Frio were also diagnosed as victims of sperm reduction. By this time, Dominguez and other doctors, intrigued by the very high incidence of this problem, began investigations to determine the reason, and they began to disclose the mystery (19). They recognized that all of the affected people had applied pesticides. Suspecting that the problem was tied to chemicals, the doctors found out the names of products used and discovered that the sterile workers had applied DBCP. In mid-1978, Dominguez sought information on DBCP from his brother, who worked in a pesticide firm; they wrote to the EPA and acquired information. Dominguez therefore found out that DBCP had been proven to cause sterility of workers in the U.S. and had been restricted in the U.S. in August 1977.

Consequently, realizing the source of the problem, and worried about the implications, the doctors talked to Standard managers and also informed the director of the Hospital Calderon Guardia, Dr. F. Urbina, about the seriousness of this problem. In November 1978, Urbina wrote a letter to government officials, including the Minister of Health and the Vice President of Costa Rica. In the letter, he summarized the findings of sterility of Costa Rican workers and the EPA's facts on DBCP, expressed serious concern, and advised ceasing use of DBCP in the country. Dr. Urbina also telephoned officials of the Health and Agricultural ministries to discuss the issue. However, no formal action was taken by the Minister of Health and other government officials in response to the doctors' advice. The Minister contacted Standard's San Jose managers confidentially, and told them about the DBCP situation (45). Yet, the managers, aided by the Minister himself, still kept the information suppressed and confidential. For example, in an interoffice memo, they stressed keeping the news about the problem out of the press, and the Minister agreed to help protect the reputation of the banana companies.

Meanwhile, a few government officials began to learn about DBCP through other sources. For example, the director of the Pesticide Registration Office (in the Ministry of Agriculture), who was responsible for making pesticide policy decisions and overseeing imports, said that in 1978 he learned of the California DBCP problems informally from trade journals and from notices by Dow and Amvac.

However, this official said he did not remember ever receiving a formal message from the U.S. EPA, even though the EPA apparently sent a telex about the DBCP issue to Costa Rica, via the U.S. Embassy in Costa Rica in 1978. In early 1979, the OCR director contacted Standard's materials manager to discuss DBCP and suggested halting its use. The OCR staff also carried out an inspection to make an inventory of warehouses in the banana zone, to identify where there were stocks of DBCP (46).

In February 1979, Standard's managers met and negotiated with government officials and representatives of Dow and other pesticide firms. Minutes from this meeting show that the managers still strongly pushed their economic interest to continue using DBCP, despite increasing evidence of sterile workers in Rio Frio. The pesticide firm representatives, backed by the agrochemical association, supported Standard's interests. By this time, independently, Dow had been sued by workers in California, and several workers in Dow's own plant in the U.S. had been diagnosed as sterile. Yet, Dow suppressed information on these events, and in Costa Rica, the powerful interests of Dow and Standard prevailed in the decision-making.

By May of 1979, some government officials became more concerned, especially after the U.S. Embassy had been contacted by the EPA, and they increased pressure on Standard's managers to stop using DBCP and to get rid of stocks. Standard finally agreed to cease its use in Costa Rica. Because Standard had a contract with Dow, imports of DBCP continued to arrive in Costa Rica ports in early 1979. However, Standard re-exported an estimated 180,329 liters during January through August of 1979 to its plantations in Honduras, where its use was continued (34). Standard also kept DBCP stocks in their warehouses until August, even though containers became increasingly corroded. In late June, this stockpile developed a large leak of 13,106 liters into the environment, which added to the public health hazards in the area (42). Standard tried to claim insurance from INS for this "loss" (42). However, INS investigated the problem, turned down the request for insurance, and instead harshly criticized Standard in a letter for the "extraordinary" problem and for the "severely corroded deplorable containers stored in unsafe conditions." However, Standard was not forced to pay for this hazardous spill.

In early 1979, the OCR began to cease giving permits for imports of DBCP in Costa Rica. The use of DBCP was not formally prohibited by law for several years. This damage from DBCP was not announced publicly, as might have been expected, and remaining stocks in the country continued to be sold from distributors. In addition, from 1972 to 1979, the OCR did not enforce existing pesticide laws to ensure that safety precautions were used by workers, due largely to lack of enforcement mechanisms and lack of political will. Moreover, this issue was not discussed by the National Pesticide Commission, which is supposed to form policies on such matters. The Commission consisted of members of state agencies and pesticide firms, but did not include representatives of workers and small farmers who use pesticides; and Commission meetings were rarely held during this period. The officials' lack of attention to this issue was thus attributable to both the biased interests of the members and the near-absence of commitment to tighten policies in order to curtail pesticide hazards.

Although Standard stopped using DBCP in 1979 in Costa Rica, the damage had already been done during the workers' years of exposure. Even by the early 1980s, information on DBCP hazards was

not revealed to the Costa Rican public. In October 1979, representatives of a banana workers' union learned of the problem, and wrote to a hospital director in San Jose, expressing concern and seeking information about the issue; but they received no response.

The problem was thus rooted in events of the 1960s and 1970s; but the effects were not realized by most of the victims until 1978-1984. Increasing numbers of sterilized men from Rio Frio were diagnosed in the early 1980s, and after 1982, victims from other plantations were found as well. The problem was not reported publicly in Costa Rica by INS and by the media until 1986 (7,16).

f. Discussion

As a final overview of the DBCP case, it is useful to refer again to the summary in TABLE 2, and to briefly review the main actors' responsibilities:

First, the workers themselves did not wear safety gear during the 1970s. However, blaming this alone would be naive, because the workers did not perceive a danger and were not given safety gear and information on this risk (up until 1978). And even if they had worn safety gear, it is unlikely the problem would have been avoided, due to the heavy use of DBCP. They are therefore innocent victims who have been robbed of their reproductive capacity, illustrating profound exploitation in the international division of labor, for the interests of Northern corporate capital accumulation.

Standard Fruit Company contributed to the problem because it did not provide safety measures and warnings to workers about DBCP before 1977. However, from 1967-77, there is no evidence that the managers knew of this high risk, and used DBCP because of its efficacy. However, after July 1977, Standard is partly culpable, since the directors insisted on continuing DBCP, knowing about the damages from DBCP in the U.S., and unethically concealing this information from the workers and the public. The managers also signed the indemnity agreement, which transfers legal responsibility from Dow to Standard. They were somewhat misled by the EPA's false claims (mentioned in part d); but in 1978, after they received information on their own workers' sterility, their push to use DBCP and to conceal facts reflected their priority on profits and their disregard of the workers' well-being. This was also remarkable because other companies ceased DBCP use in 1977-78, and because Standard still used DBCP in Honduras after stopping use in Costa Rica.

Costa Rican state decision-makers did not ensure that precautions were taken for DBCP nor restrict its use. However, before 1977-78, this inaction was reasonable, based on the limited information they were given on DBCP. However, after new information emerged in 1978, even though most of the damage had already occurred, government officials' contributed indirectly to further damage of the workers because they delayed banning DBCP use and suppressed information in order to protect Standard and Dow, regardless of doctors' warnings. Yet the government's responses at this time were shaped by the pesticides' firms concealment of information, by the strong pressures by Standard, and ultimately, economic forces ingrained in Costa Rica's development process, which is focused on agroexport growth, heavily influenced by U.S. interests, and shackled by debt and inequities.

The U.S. government contributed to the problem as well. In 1961-62, government regulatory agencies allowed DBCP to be registered, with minimal label warnings, without insisting on more research

from Dow and Shell on the product. Then, when the sterility effects emerged in 1977, the EPA is culpable for determining a false risk calculation for field users. In addition, the "notification" provision of FIFRA did not function, since the information did not reach relevant Costa Rican decision-makers in the agricultural and health ministries. Yet, the EPA still did not have full knowledge of some of the early toxicology studies and actions of Dow and Shell researchers, until later court trials in 1979 and 1980. Moreover, the US government's maintenance of "double-standard" export practices results from a lack of political will and pressures by the pesticide industry.

Finally, the DBCP manufacturers had the initial and predominant control of the information on DBCP, and of the product itself. They used that power to effectively pursue their profit interests. Their sales of DBCP helped farmers around the world to benefit from its use. Yet, the firms concealed toxicity information from the regulatory agencies, users, and the public – which fulfilled their aims. In 1977, when human sterility from DBCP was discovered, the companies were forced to release more information and even resisted Standard's requests to buy the product for awhile. Yet, Dow continued selling DBCP to Standard and still tried to maintain secrecy about it, and has unrelentingly fought the workers' claims.

In sum, the early concealment of information by those who controlled knowledge – the transnational manufacturers – led to sterilization of hundreds. Yet the causes entailed a chain of events involving Standard managers, governments of Costa Rica and the U.S., doctors, managers, and lawyers. Blame has been shifted from the actions of the workers to the gaps and concealment of information and the paucity of social/ ethical concern, which was determined by the driving profit interests of those who controlled information and resources and who therefore had more political-economic power. These final factors are rooted in the intrinsic motives and pressures of this form of agroindustrial production, which maintains hierarchical and oppressive labor systems, and prioritizes short-term profit motives and fulfillment of production goals over social and long-term environmental concerns.

D. RESPONSES AND POLICY IMPLICATIONS

1. Responses and Strategies by the Government, Standard, and Dow

Before discussing policy implications, it is interesting to note additional responses that have been made by various actors in reaction to the DBCP problem:

Costa Rica's government continued an informal policy to not allow DBCP imports until 1988; and finally passed a formal law in 1989 to prohibit the import and use of DBCP. In addition, the OCR has tightened general rules and registration requirements for pesticides over time (2,4). In 1979, the US government banned the use of DBCP in the U.S., eliminating the exemption for its use in pineapples and bananas in the U.S.

INS is continuing investigations and compensation payments for DBCP victims and other poisoning cases, as well as inspecting other pesticide hazards in banana plantations. However, INS did not raise Standard's insurance premium rate because of this problem.⁶ In recent years, INS has given several training seminars per year on safety precautions for banana company employees. The Ministry of Health has also begun to give seminars to rural health workers on pesticide safety, but has not yet fulfilled its enforcement responsibilities (2,4). The government still maintains a "bandage" approach in

reaction to pesticide problems, which usually lack enforcement; and it has only slowly begun to enact preventive measures.

Standard Fruit Company has made some changes. During 1980-87, the company used mainly Nemacur instead of DBCP. Although Nemacur costs more per hectare than DBCP by about 5-10%, it has produced satisfactory results. In 1986-88, other nematicides, including Furadan, Temik, Vydate, and Mocap, have also been alternated with Nemacur. Since 1979, the company has tightened safety methods and has provided protective gear for nematicide applicators. In the early 80s, Standard's microbiologist began cholinesterase blood tests of workers before applications, which indicates their level of susceptibility to some toxic pesticides. Workers who have abnormal results are not allowed to apply nematicides. Supervision of the application tasks has also become increasingly strict over time. Nematicide applicators are now paid the highest wages of all of the workers' production tasks (about 2 to 3 times more than the average daily wage), because of the high risk and because of union demands (4). Yet, this "appeasement" with a higher salary does not rid of this form of labor exploitation.

These changes have added some costs to Standard's production in Costa Rica, but these are negligible costs compared to the millions spent and earned by the company in its numerous investments and locations in the world. In other words, the changes have not created significant economic losses, and has not made a significant difference in Standard's total profits or its competitive position. Therefore, the managers' worries about the losses from stopping DBCP were distorted and exaggerated. Moreover, the company's recent changes clearly cannot relieve the suffering and physical and emotional damage which already happened. In addition, as noted in Part A, nematicide poisoning has continued to occur frequently in the banana sector from the newer toxic nematicides. These newer products are highly toxic and hazardous.

Finally, since 1980-81, pesticide firms have ceased exporting DBCP to Costa Rica. Dow and Shell have lost law suits by about 10 victims from the US. The firms have been found guilty for concealing information on DBCP hazards (ie, "failure to warn") and were thus held accountable for their past unethical actions. Each of the men were awarded about \$4.9 million dollars each. Approximately 50 other U.S. victims sued, and then settled for payments out of court. Over 100 additional workers in the U.S. are sterile from DBCP exposure, but state Labor laws prevent them from suing, because they are employers in Dow's own formulating plant. Litigation for other sterilized US workers continues up to the present day. The losses of these law suits constitute a financial burden for the transnational companies. Thus, the potential of losing hundreds of cases from Costa Rica poses a threat.

2. Policy Implications

Although some adjustments and improvements are being made in response to pesticide hazards, most are not sufficient to deal with the roots of the problems. Further actions by individuals and by government agencies are needed. It is not possible in this concluding section to discuss policy issues at length or to derive detailed suggestions from one pesticide case for all cases. Moreover, the conditions of pesticide use in banana production are different than most agricultural sectors in Central America, mainly because most farmers have even less knowledge and less technical sophistication than

the banana companies for chemical use. Nevertheless, it is possible to extract several general lessons from the DBCP case concerning pesticide hazards and policies:

Technical changes can help to some extent to alleviate or prevent health impairment. For example, changing to less hazardous products, improving application techniques (such as using good quality applicators), following re-entry guidelines, cholinesterase monitoring, and using safety equipment are methods that can avert risks in many cases. Incorporating Integrated Pest Management (IPM) – i.e., the mixture of cultural, biological, and chemical method – helps substantially to reduce chemicals and their hazards (1,48). However, technical changes are limited as solutions, depending on social, environmental, and biological factors. For example, in the DBCP case, the depression of sperm is extremely difficult to prevent, even with good safety equipment.

Technical changes can rarely occur without social and political-economic changes. For example, incorporating precautions may require confronting profit priorities among enterprise directors, which may require political pressure or coercion from the state, because companies are often unwilling to bear these costs. Enforcing labor laws or raising insurance premiums when the problems occur may help force employers to give protection and information to workers. But, such measures are also limited. Often, workers need to mobilize or raise demands through unions in order to insist on having protection and safer pesticides, as well as better wages, information and rights in decision-making. Incidents such as the DBCP case can force companies to make changes for public interests. For small-scale farmers, such technical changes require broader socio-economic reforms which enable poor people to acquire less toxic chemicals, low-cost safety equipment, and education on risks. IPM must be backed strongly by ample funding and by political commitment, if it is to succeed on a large scale. It is also necessary to develop agroecological diversity in production, breaking down the large homogeneous crop systems which are highly vulnerable to pests. Such reforms constitute major political challenges.

In addition, Third World policy-makers, producers, and consumers need to improve their access to and control over information on pesticides and pest control options. This necessity is particularly urgent in small-scale agricultural sectors, where access to information is even more constrained than in the banana sector. Although Costa Rica's officials have tried to improve information flow, the efforts can be strengthened partly by using more information from international bodies and other countries. The DBCP case suggests that the registration process and label improvements are not enough alone to close information gaps. Other useful actions include: ensuring that firms disclose complete data on their products; training on pest control for extension officers; and building bottom-up flow of information so that workers and farmers acquire their pest control needs and teach their own effective methods. Beyond this, workers, small farmers and consumers need to participate in the National Pesticide Commissions, to set priorities in pest control and public health, to aid in policy-making, and to acquire full information on options available. Public participation will be more effective if it entails empowerment and politicization of poor or oppressed people – enabling them to gain power, material resources, and well-being.

Actions are urgently needed to deal with the international marketing practices of pesticide firms.

Misleading advertising must be eliminated; and for example, a "danger" warning should be required on every advertisement as well as on labels. The information gaps in the DBCP case illustrates that the "notification provision" of FIFRA is ineffective as intended, and thousands of pesticide users are never aware of the information sent from the U.S (41). It is therefore necessary to change this law and to enact more strict monitoring of imports. An effective strategy for developing this is forming a centralized national purchasing system -- entailing systematic screening and selection of all pesticides and competitive bidding by suppliers for the lowest prices -- which would reduce the costs of imports, eliminate superfluous and hazardous products, and better meet farmers' needs.

Enforcing standards of the FAO and WHO may also deserve further support. Political actions must be strengthened in the North to eliminate harmful "double-standards," to hold TNCs accountable for socially-harmful actions, and to ensure ethical business practices. The public and decision-makers in each developing nation must evaluate the trade-offs and establish strategies for themselves; and it is not always appropriate for Northern institutions and environmentalists to impose their methods and standards on other countries.

In sum, there are no easy answers to resolve such complex dilemmas. Making the changes outlined about may require major transformations in foreign investment activities and in development patterns. Confronting the roots of the problems is vital in order to develop effective strategies for sustainable and equitable development.

Acknowledgements:

I am grateful to many people interviewed for this study, particularly: the banana workers and managers of Standard Fruit, physicians and policy officials in Costa Rica, Charles Siegel, Duane Miller, Alexander Bonilla, Marlene Chavez, Roberto Chavez, Ineke Weseling, Eduardo Viso, and Donald Whorton. I also appreciate the comments of Simon Maxwell, Jerry Ravetz, Joyce Tait, David Weir, Charles Siegel, and Donald Whorton on drafts of the paper.

ENDNOTES

1. These psychological disorders have been diagnosed and defined by physicians involved in examining these patients.
2. Quote from one of the victims (name kept confidential for personal reasons), July 1990.
3. The salary of banana workers ranges to some extent, but in general it is generally approximately \$3000 per annum.
4. Charles Siegel, lawyer, Baron and Budd law firm, interviews, 1987-1989. This case was rejected by the U.S. judges on the ground of forum non conveniens, a legal doctrine which, in general terms, denies foreign citizens access to U.S. courts, because of "inconvenience."
5. LD-50 means lethal dose 50% which expresses the dose at which 50% of a given population of test animals dies. The Lower the LD-50, the higher the toxicity. The basis for establishing the LD-50 figures for the DBCP case are discussed later in the article, in Part B3.
6. INS officials interviewed said that they did not think these cases were sufficiently important to warrant a change in insurance premiums. It appears that they are also under pressure by Standard to not raise the premium.

APPENDIX: SUMMARY OF DATA FROM SURVEY OF STERILE WORKERS

A survey of 35 workers was undertaken in 1988. This group consists of the first workers who filed law suits against the transnational companies. These workers were chosen because they had clear medical confirmation of damage and were accessible for interviewing. The questions on the comprehensive interview form were prepared in consultation with the lawyers and medical doctors involved in the investigation. (In 1990, the author undertook 150 interviews of sterile workers who later filed law suits, following the survey of this first group; but those data are not presently included.) This group was analyzed as a representative sample. The results of the survey are summarized below:

Ages: Mean age of sample is 37.65 years
 Median age is 35 (represented by 31.4%)
 Range of ages is 30 to 55; 28 (80.0%) are ages 30-39

Marital status: 1 (2.8%) single
 Of 34 remaining: 22 (64.7%) married;
 9 (26.5%) divorced due to problem of sterility
 3 (8.8%) divorced not due to sterility problem

Children: 33 (94.3%) had no children after DBCP exposure *
 17 (48.6%) of 35 had no children before DBCP exposure and still had no children;
 All expressed desire to have ability to engender children.
 18 (51.4%) had at least one child before DBCP exposure
 Of those 18 with children, mean number of children is 1.5 (range from 1 - 5)
 11 (or 61.1%) have one child only
 3 (8.5%) of the wives have had abortions
 1 (2.8%) of wives had defective children during 1970's

Years working for Standard Fruit Co:
 Mean number of years with SFCo is 13.14
 Median number of years is 14 (for 22.3% of sample)
 Range from 4 years to 27 years; 88.6% worked from 10 - 17 years.

Previous Jobs: 24 (68.6%) had worked in agriculture before working for Standard Fruit Co.

4 of group (ie, 11.4% of total) used herbicides in previous jobs.

2 had worked for United Fruit in 1960's and early 1970's using DBCP applied by irrigation system -- ie, maintained and cleaned nozzles/pipes

Dates and Years of Exposure/Application of DBCP:

All were exposed during 1970 - 1978 (inclusive)

Numbers of years exposed ranged from 2 to 9

Mean number of years was 5.06; Median was 5 (3 could not remember years/dates)

Dates of exposure were concentrated in 1974-77.)

Plantations Where Worked: All worked in Rio Frio; in Finca numbers 3 - 11

Method of Application: All (100.0%) used DBCP injector (described in text)

In addition, 3 also worked in maintaining irrigation systems for DBCP in other areas, such as Estrella or United Fruit Co., before working with DBCP in Rio Frio

Frequency of Applying DBCP:

45.7% applied daily; 54.2% applied it 2 to 4 times per week

Protection: 34 (97.1%) wore no kind of protective/safety gear

1 (2.8%) wore rubber gloves for mixing; due to his own initiative and interest in avoiding skin irritation

Warnings: 33 (94.3%) received no warning or explanation of the risk or hazards of DBCP

2 (5.7%) mentioned that "the capataz said that it was toxic" (but did not mention sterility)

Containers: All reported that DBCP containers were large white drums with red or blue letters saying "Fumazone" or "Nemagon"

(3 said that there was also small writing in English on some labels of the drums)

Date of first medical exam about the DBCP problem:

Ranged from 1977 to 1983; 48.6% had it in 1981; 17.1% had it in 1980

Date consulted INS for medical verification: Ranged from 1977 to 1986

51.6% were in 1981

Date of first being informed/confirmed of sterility due to DBCP:

Ranged from years 1977 to 1986; 37.1% were informed in 1981

Doctors who did exams: Did not remember name : 9 (25.7%)

Rosabal 13 (37.1%); Dominguez 4 (11.4%)

Calvosa 3 (8.6 %) Umana: 3 (8.6%); Others 3 (8.6%)

Formal Complaint issued to INS regarding problem:

33 (94.3%) made a formal complaint to INS (denuncia)

2 (5.7 %) had not made formal complaint to INS

Compensation: 25 (71.4%) had received compensation

10 (28.6%) has not received compensation

Venereal disease: 6 (17.1%) had had venereal disease at some time

29 (82.9%) had never had venereal disease

Prostate disease: 100% had never had prostate disease

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The CHAIRMAN. Doctor, thank you for your testimony. As I said, the prepared testimony will be part of the record. I read your statement before and found it very moving in reading it, and find it even more so in hearing you refer to it.

We will have each of the witnesses share their statement and then we can ask questions of them as a panel, if there is no objection.

We will go next to Mario Zumbado. Go ahead, sir.

STATEMENT OF MARIO ZUMBADO, RIO FRIO, COSTA RICA

Mr. ZUMBADO [Interpreted from Spanish]. I have come to speak before all of you. I wanted to tell you that I began working for the Standard Fruit Company in 1970 as a field worker. We began spraying nemagon in 1972, and I sprayed the substance up until 1974.

In 1974, I was appointed foreman and I was in charge of spraying nemagon. In 1973, I was married. I was married up until the year 1977. My wife and I were planning—we were planning at that point to have a child in our house. My wife and I had been planning to have a child, as I said, but no child was born, and in 1978, since there had still been no child, we decided to go to the doctor.

So my wife went to the doctor and she underwent a number of tests. Her tests were all fine. The doctor then asked for me to go to his office, and I did and I underwent treatment. This went on until 1982, at which point our doctor, Dr. Rosabal, stated that I was sterile.

In 1978—precisely, November 20—there was an order to the Standard Fruit Company that this product, nemagon, should not be applied to any more of that company's plantations. By 1979, my wife was desperate for a child and she decided to leave me, and that is where my whole tragedy began.

The following month, my mother died, as well, and my life became even more tragic. I underwent a difficult torment. I suffered from severe depression and I was hospitalized for over a month at Calderon Guardia Hospital, and all of this was because of this product, nemagon, and all of the problems that it has caused me.

I think that these are the most serious problems I can tell you that I have had, and I want to thank you for all the aid that you can give those of us who are suffering this very grave problem.

The CHAIRMAN. When we finish the testimony, I am going to ask you to demonstrate the equipment that you used to apply the pesticide, but I want to go through each of the witnesses first, and I would ask now if Mrs. Zumbado could testify.

STATEMENT OF VICTORIA SIBAJA de ZUMBADO, RIO FRIO, COSTA RICA

Ms. ZUMBADO [Interpreted from Spanish]. Good morning, very respected gentlemen, and I thank you for inviting us to be here. I am going to present the problem that I bear every day of my marriage.

I married Mario in 1986. I knew that he was sterile, but when you love someone you accept any defect he or she may have. At first, we had many emotional problems. Sometimes he was de-

pressed. Later, we faced this little by little. I have always wanted a child. It is what every woman wants, and it is very depressing to know that I will never have that happiness with the man that I chose.

I feel very bad when people who very well know what our problem is humiliate us, asking insistently you two have been married for such a long time, why don't you have a baby yet? It is getting late for you. And I don't know what to answer them at that point. They just do it to bother us and to humiliate us.

When I see my sister who grew up with me with a beautiful child that she has, and considering the fact that she was married much later than I, I think that I could have a child older than hers, a child of maybe 3 or 4. But this will not be easily possible, nor will it be possible in the natural way I would have wished because the lack of responsibility of a few, finished off the happiness of many people.

Since I want to have the chance to be a mother and to know what it is to have my own child, I want to undergo artificial insemination, but this has still not been possible because we don't have enough money to do it. We have sometimes had problems or arguments because without thinking of it, sometimes as we walk down the street I say to my husband, oh, look at that beautiful little girl, or I mention the subject of his sterility and he doesn't like to talk about it because it depresses him very much.

What these industries have done is a crime. I want them to pay in some way so that it never happens again and so that this fact is not forgotten. It cannot be paid in money because a child has no price, but that is the only way because the damage has been done and we can't turn back, and they must pay for the moral injury they have done to our husbands.

I thank you for all the support that you can give us so that the large industries think twice about what they do, and that they start to think that we, too, are human beings who feel just like people in the first world.

Thank you.

The CHAIRMAN. Thank you, Ms. Zumbado. I know this testimony has not been easy for either you or your husband, and I appreciate your being here.

Senor Loaiza, we will have testimony from you next.

STATEMENT OF WALDEMAR LOAIZA, RIO FRIO, COSTA RICA

Mr. LOAIZA [Interpreted from Spanish]. I began working for the Standard Fruit Company in 1974. In 1976, I was assigned a house around the plantations. Nemagon was being applied around the plants in the evening. There was a very strong smell from the pesticide coming to the houses, and when we would wake up in the morning we could smell it very strongly.

It was at that time that there was a lawsuit, or there was some problem, that they forbade this type of irrigation of the pesticide and they began using the injection technique. I carried out that work for about 2 years and 8 months. In 1975, I was made a group foreman and the foreman always has to do with the product because he has to supervise the work that is being carried out with it.

In 1977, I was sent to Colombia to work on some private plantations belonging to Standard. Then in 1978 when I returned, I was sent to the Rio Frio area. I always continued to supervise the work being carried out with the pesticide, and in 1978 they stopped all the applications.

In 1980, I began to live with an 18-year-old girl and she became angry because we wanted to have a child, but she could not get pregnant. And then I went to the Rio Frio clinic and I went to see Dr. Humana, and he sent me to Calderon Guardia Hospital and they took this as a case of professional risk and they sent me on to the institute.

I was treated for 2 years and 8 months until I was determined to be sterile. This news was the biggest blow I have had in my entire life, but they carried out a biopsy on me, and starting then my life changed completely. I became an alcoholic, and with the help of God I was able to overcome that error because that was not going to solve my problems, the fact that I could not have any children and the problem of impotence that I suffer from.

But I met a girl who is my wife today. She realized what my problem is and she accepted me this way, but things were very difficult at first. They were rough, and we overcame the problems as they came, the desire to have our family, and at that point we had to go through adoption. But that has not solved the entire problem because impotence is a personal problem.

I thank you very much, Senators, for hearing us, and I hope you will help us and do your best so that in the future these problems do not come up.

The CHAIRMAN. Thank you very much, Mr. Loaiza.

I wonder, Mr. Zumbado, whether you could demonstrate for us how you used the applicator for DBCP.

Mr. ZUMBADO [Interpreted from Spanish]. Let us say this was the banana plant here, and from this offshoot of the plant you would measure about 7½ inches. You would apply it in a half circle, pressing on the plunger in this way, and in the first part of the circle you would leave the holes uncovered. This was done by order, and in the second circle, we received orders that the holes had to be covered over in this way with our feet.

The other problem we ran into was that sometimes you would hit a stone at the bottom, and so the liquid which was supposed to come out of the little holes at the bottom would come up and spray your eyes and your face. And because of the constantly striking stones, this part of the plunger would become very loose, and we would constantly have to be touching this part of the whole apparatus and so you would get all this liquid on your hands.

The CHAIRMAN. By "this part," you mean the part down there on the bottom?

Mr. ZUMBADO [Interpreted from Spanish]. Yes, this part down here, and also this part on the top where you have the screw top. The liquid would come out of there as well and it would get on your hands.

The other problem was that about after every 15 minutes or so, you would be making applications and you would have to readjust the lower portion, the bottom part here. This had to be calibrated every 15 minutes.

The CHAIRMAN. How were you dressed during this?

Mr. ZUMBADO [Interpreted from Spanish]. Just normal clothes, a short-sleeve shirt and pants, leather shoes.

Senator GRASSLEY. Did he have gloves?

Mr. ZUMBADO [Interpreted from Spanish]. No, sir, no gloves, no mask, and no rubber boots because nobody told us that this was harmful.

Senator GRASSLEY. There were never any elementary lessons on safety or anything?

Mr. ZUMBADO [Interpreted from Spanish]. No safety lessons. The only lessons we received were how to make the applications around the plant.

The CHAIRMAN. Could I see that just a moment?

Do you use anything like this, Chuck?

Senator GRASSLEY. No, we don't use anything like that.

[Pause.]

The CHAIRMAN. I just want to ask Senator Grassley to repeat two questions he asked up here because I think that they are vital to this and they should be on the record. Chuck, why don't you go ahead?

Senator GRASSLEY. Is the applicator still—

Mr. ZUMBADO [Interpreted from Spanish]. No, sir, the applicator is not used any longer.

Senator GRASSLEY. And was it changed or not in use today because of the lack of safety?

Mr. ZUMBADO [Interpreted from Spanish]. No, it is no longer used because nemagon was placed in disuse in 1978, and what they are using now are other products. I don't know the names of these—Counter.

Senator GRASSLEY. Yes. The point was not what products are they using, but do they still use the same piece of equipment, because all chemicals have some danger.

Dr. CHAVES. If I may, Senator, the injector was used up to the moment that the nemagon injection in soil was stopped and never used after that for any other purpose.

Senator GRASSLEY. So, what chemical is used now is another former of application?

The CHAIRMAN. It is not injected.

Senator GRASSLEY. Yes, not injected.

Dr. CHAVES. It is not injected.

The CHAIRMAN. Dr. Chaves, you have heard the testimony of the Zumbados and Mr. Loaiza. On the testimony you have heard today, is that all consistent with what your own studies have shown, what you have seen with all the other people you have talked with or the case histories you have reviewed? Is everything they say here consistent with what you had already learned?

Dr. CHAVES. Yes.

The CHAIRMAN. I must say, Mr. and Ms. Zumbado and Mr. Loaiza, I find your testimony extremely moving, and I note that you were not told to wear protective clothing, as I understand Mr. Zumbado's testimony. You just wore a short-sleeve shirt and normal shoes. You didn't even wear gloves.

I also understand your testimony is that you were not given special training; you were simply told where to inject the chemical.

You have told us of the sterility caused by this and I realize it is not easy to talk about such matters in a room full of television cameras and people.

I will start with you, Mr. Zumbado. Were you ever told that if you worked with this chemical that you might never be able to be a father?

Mr. ZUMBADO [Interpreted from Spanish]. No, sir, I was never told that.

The CHAIRMAN. Mr. Loaiza, what about you, sir? Were you ever told that you might be made sterile by use of this chemical?

Mr. LOAIZA [Interpreted from Spanish]. No, sir.

The CHAIRMAN. Mr. Zumbado, you knew this chemical was made in the United States, didn't you?

Mr. ZUMBADO [Interpreted from Spanish]. No, sir, I didn't know.

The CHAIRMAN. Mr. Loaiza, did you know whether it was made in the United States?

Mr. LOAIZA [Interpreted from Spanish]. No, sir.

The CHAIRMAN. When you were using the chemical, did you think it was unsafe?

Mr. ZUMBADO [Interpreted from Spanish]. We never even knew where the substance was coming from. We simply worked and we worked with great love for what we did and we didn't know any more than that.

The CHAIRMAN. But you were never told that there could be a real danger in using this chemical?

Mr. ZUMBADO [Interpreted from Spanish]. No, we were never told that. The only thing we were told to do was to always carry water with us in case we hit a stone and the liquid sprayed into our face or into our eyes, so that we could reduce the stinging in our eyes with the water.

The CHAIRMAN. And, Mr. Loaiza, you were never warned of dangers of this chemical?

Mr. LOAIZA [Interpreted from Spanish]. No, sir.

The CHAIRMAN. But, now, you understand what the real danger was?

Mr. LOAIZA [Interpreted from Spanish]. Yes. Now, I do; of course, I do.

The CHAIRMAN. If you had known that use of this chemical could cause you to become sterile, would you have ever used it?

Mr. LOAIZA [Interpreted from Spanish]. No, sir, even if I had had to leave my job.

The CHAIRMAN. Mr. Zumbado, what about you, sir?

Mr. ZUMBADO [Interpreted from Spanish]. At the moment I would have realized what I was dealing with, I never would have worked with these pesticides that have caused such great damage to humanity.

The CHAIRMAN. I want to ask Mrs. Zumbado some questions.

Ms. Zumbado, you have mentioned that you have a sister. Do you have other brothers or sisters?

Ms. ZUMBADO [Interpreted from Spanish]. There are six of us.

The CHAIRMAN. And so you grew up in a family where there were many children?

Ms. ZUMBADO [Interpreted from Spanish]. Yes, sir.

The CHAIRMAN. And is it fair to say that you yourself would like to have children?

Ms. ZUMBADO [Interpreted from Spanish]. Absolutely, to give a grandchild to my mother and to give nephews and nieces to my brothers and sisters.

The CHAIRMAN. I understand that would be quite important where you live, with the way you have been brought up yourself.

Ms. ZUMBADO [Interpreted from Spanish]. That is right.

The CHAIRMAN. You knew when you married that you probably would not be able to have children, you and your husband?

Ms. ZUMBADO [Interpreted from Spanish]. Yes, I knew that.

The CHAIRMAN. But, certainly, if there was any way to reverse what had happened, you would want to, is that correct?

Ms. ZUMBADO [Interpreted from Spanish]. Yes, of course.

The CHAIRMAN. Thank you. As a father, I think I can well understand what you are saying and what it means to you.

Ms. ZUMBADO [Interpreted from Spanish]. Thank you very much.

The CHAIRMAN. Senator Grassley.

Senator GRASSLEY. Just a couple of questions. Would these two gentlemen who testified here, who have been very much harmed by the use of these chemicals—was what they told us about not being properly instructed as to the dangers by their employers—would they feel that that was a common practice of employers at the time they were injured or was it more apt to be lax standards by their employers and maybe some other employers did a better job?

Mr. LOAIZA [Interpreted from Spanish]. At the time that product was taken to Costa Rica, we received no instruction on the damage it might produce because now, with the new products they are taking, they are providing very clear instruction, appropriate equipment for security, and you really feel safe with it. But with nemagon, they never worried about giving us any kind of security instruction.

Senator GRASSLEY. Well, I believe that the second question I was going to ask was about what the practice might be today, and I think you very satisfactorily answered a second question I was going to ask. But I want to go back to a period of time, like I think the 1970's when they were employed.

Was the way they were—the lack of instruction they had, was that a common practice among most agricultural employers in the country, or do they think it was more lax in their employer than maybe with employers generally?

Mr. LOAIZA [Interpreted from Spanish]. Perhaps it wasn't the company, but our immediate supervisors, who didn't provide us with adequate instruction. I really can't say anything about other companies. I have only worked with Standard Fruit Company.

Senator GRASSLEY. OK, I thank you very much; very helpful.

The CHAIRMAN. We will take about a 3- or 4-minute recess and allow this panel to leave and then we will have another panel. Thank you.

[Recess.]

The CHAIRMAN. Dr. Wesseling and Dr. McConnell, I appreciate both of you being here. For the record, I would note that Dr. Wesseling has been in charge of a pesticide research program for 8 years in Costa Rica, and Dr. McConnell has studied pesticide use in

several countries, including Nicaragua. Dr. Wesseling is with the Pesticides Program at the National University in San Jose, Costa Rica, and Dr. McConnell is with the Mount Sinai School of Medicine in New York.

Dr. Wesseling, we will start with you. Go ahead.

STATEMENT OF CATHARINA WESSELING, NATIONAL UNIVERSITY, SCHOOL OF ENVIRONMENTAL SCIENCES, HEREDIA, COSTA RICA

INTRODUCTION

Dr. WESSELING. Good morning, Mr. Chairman and members of the committee. I would like to thank you for inviting me to present my opinions on the Circle of Poison Prevention Act of 1991. I would also like to describe to you the conditions of pesticide use in developing countries, such as Costa Rica, which will demonstrate how important it is for this bill to pass this year.

THROUGH OUR STUDIES WE HAVE FOUND PESTICIDE USE IN ALL THE CENTRAL AMERICAN COUNTRIES TO BE INTENSIVE, EXTENSIVE, AND THOROUGHLY OUT OF CONTROL

Simply put, through our studies we have found pesticide use in all the Central American countries to be intensive, extensive, and thoroughly out of control.

We have seen or documented many human poisonings, including fatalities, among workers and their families. We have seen contaminated waterways; sickened, and even dead animals; and pesticide-laden foods.

This is the situation in Costa Rica, despite the fact that the country has the highest literacy rate, the best health care system, and the best pesticide regulatory system in the region. We have become hooked on the pesticide treadmill. If Costa Rica is the most advanced country in Central America and we are experiencing pesticide problems, the situation is magnified in other countries.

LET ME EXPLAIN TO YOU SOME OF THE PROBLEMS

PESTICIDE REGULATION—THE REGISTRATION PROCESS AND IMPLEMENTATION AND ENFORCEMENT

First of all, we only have a handful of people in the registration sections of the two ministries involved in the process, none of whom are toxicologists, ecologists or even biologists. Only limited data on toxicity and environmental studies are required. Furthermore, once these pesticides are in the field, no one in the government is systematically monitoring whether the pesticides are used for the approved purposes and if they are causing poisonings of workers or the environment. Monitoring of residues in food is only beginning.

I understand that this last point is of particular interest to this committee, since Costa Rica exports to the United States large amounts of fruits and vegetables.

REGULATORY ACTIONS

Both pesticide residue problems on exported commodities and pressure from international organizations has resulted in Costa Rica taking regulatory action against several problem pesticides. In fact, 16 pesticides have been banned for most or all uses, among them many "dirty dozen" pesticides, including U.S.-banned heptachlor and chlordane, as well as other pesticides following U.S. initiatives, sometimes.

LACK OF ACCESS TO INFORMATION

However, one of the primary problems individuals and organizations in Costa Rica face is a lack of information on the toxicity of pesticides. The public has no access to the limited data which are provided to the government.

We are forced to rely on labels, which provide mostly use information and some short-term toxicity information. Not one label in Costa Rica has any reference to its ingredients' ability to cause cancer, birth defects, or neurological defects.

I cannot stress enough why it is so important that the United States help distribute information on the toxicity of all pesticides you export to us.

PESTICIDE COMMERCE: IMPORT AND FORMULATION

Costa Rica imports almost three times as many pesticides from the United States as from any other country. These pesticides include many which are severely restricted, as well as others which are manufactured but have never been registered in the United States.

PESTICIDE USE PROBLEMS: POISONINGS AND CONTAMINATIONS

Pesticides cause many problems. I have seen the prophylactic, calendar spraying of pesticides with no pests even present.

Often, pesticides are used on crops for which they are not registered. Preharvest intervals are not respected, generally.

I have also seen human poisonings. Since the sad DBCP story has already been discussed, I will point to the fact that other extremely toxic U.S. pesticides, such as American Cyanamid's terbufos, Rhone-Poulanc's aldicarb, and ICI's paraquat, cause the vast majority of all pesticide poisonings in Costa Rica.

A large amount of these pesticides are used on U.S.-owned banana plantations. On those plantations, some occupational health preventive measures are implemented, like protective equipment for applicators of pneumatocides. No such equipment is given to nonapplicators working in those same fields or to paraquat sprayers or workers exposed to fungicides or terbufos-impregnated bags.

My experience is that it is very hard to get workers to use protective equipment even when it is available. It is too hot. Besides that, a vast majority of workers in Costa Rica and Central America are not working on those U.S. plantations and they don't use protective equipment at all.

Let me give you some examples of those poisonings. In 1988, two 15- and 16-year-old boys died from exposure to terbufos while working in the fields. Hundreds of workers have experienced paraquat poisonings and burns, and the same chemical was responsible for 35 fatal occupational poisonings in the 1980's. In 1987, in just one region of the country, aldicarb caused at least 113 poisonings. Heptachlor was found in 90 percent of samples of human adipose tissues.

As today it is World Environment Day, it is particularly important to stress the environmental impacts of pesticide use. Our program has documented 77 cases over the last 3 years of mortality in a wide variety of wildlife, farm and domestic animals.

The use of terbufos caused massive fish kills near a banana plantation just last year.

The insecticide heptachlor has contaminated bird eggs, meat and fish. No government program includes the routine monitoring of pesticides in the environment.

CONCLUSION

The problems I have outlined today are not only inherent to Costa Rica, but to all countries in Central America. As a result of this situation, I would like to say what I said before. It is critical that the pesticide export legislation offered by Senator Leahy passes, and that it passes this year.

I thank you for the opportunity to testify and would be happy to answer any questions.

[The prepared statement of Dr. Wesseling follows:]

STATEMENT OF
CATHARINA WESSELING, M.D.
NATIONAL UNIVERSITY, SCHOOL OF ENVIRONMENTAL SCIENCES
HEREDIA, COSTA RICA

BEFORE THE
COMMITTEE ON AGRICULTURE, NUTRITION AND FORESTRY
U.S. SENATE
JUNE 5, 1991

Good Morning, Mr. Chairman and Members of the Committee. I would like to thank you for inviting me to present my opinions on the "Circle of Poison Prevention Act of 1991." I would also like to describe to you the conditions of pesticide use in developing countries such as Costa Rica which will demonstrate how important it is for this bill to pass this year.

By way of background on myself, I am a Dutch-born doctor with a particular background in pesticide poisonings. Since 1983, I have worked in the Pesticides Program of the National University in Costa Rica. Among other things, I coordinate the systematic research throughout the seven countries of Central America concerning the import, formulation, and use of pesticides.

Simply put, through our studies we have found pesticide use in all the Central American countries to be intensive, extensive and thoroughly out of control.

We have seen or documented many human poisonings, including fatalities, among workers and their families. We have seen contaminated waterways, sickened and even dead animals (domestic, farm and wildlife) and pesticide-laden foods. This is the price Central America is paying for its efforts to become a major agricultural export region and pull itself out of its terrible debt situation.

This is the situation in Costa Rica, despite the fact that the country has the highest literacy rate, the best health care system and the best pesticide regulatory control system in the region. We have become hooked on the pesticide treadmill. If Costa Rica is the most advanced country in Central America and we are experiencing pesticide problems, the situation is magnified in other countries.

Let me provide you with some background information on how our pesticide regulatory system works, or, rather, doesn't work. I also would like to describe some of the problems we face on a daily basis from the use of pesticides.

1. PESTICIDE REGULATION:

There are many laws, regulations and decrees which cover the use of pesticides in Costa Rica, including the 1987 "Regulation concerning the use and control of agricultural pesticides and inert ingredients." These control measures may look impressive on paper, but in reality the registration process is inadequate, laws are not enforced and human poisonings and environmental contamination are the result.

1.1. The Registration process

Pesticides are registered by two different ministries, depending on their intended use. Agricultural use pesticides are registered by the Division of Plant Protection of the Ministry of Agriculture. Persons seeking a pesticide registration provide the Ministry with mostly physical (solid, liquid or gas) and chemical characteristics information (solubility, stability, vapor pressure and odor), the results of a few toxicity studies (mostly acute, or short-term effect studies) and a sample label. Little chronic, or long-term, data and even less environmental fate data, are required. These pesticides must get final approval from a commission of the Ministry of Health. By 1989, 197 pesticides making up 852 formulations were on the registration list of agricultural use pesticides.

Home-use and veterinary pesticides are registered by the Ministry of Health. However, this Ministry has developed neither pesticide registration criteria, nor even a complete list of pesticides which it has approved even in the absence of criteria.

1.2. Implementation and Enforcement

In addition to the above, there are several other problems with our registration system.

First of all, we only have a handful of people in the registration sections of the Ministries, none of whom are toxicologists, ecologists or even biologists. Furthermore, once these pesticides are in the field, no one in government is systematically monitoring whether the pesticides are used for the approved purposes and if they are causing poisonings of workers or the environment. Monitoring of residues in or on foods is only beginning.

I understand this last point is of particular interest to this committee, since Costa Rica exports to the United States large amounts of bananas, pineapples, coffee, melons, beef and several other commodities.

In fact, in terms of imports into the United States, Costa Rica is number 2 for bananas, number 1 for fresh pineapples and number 5 for beef.

In 1988, the Food and Drug Administration (FDA), which checks imported foods at your borders, rejected at least 3 containers of Costa Rican fruits and vegetables because of illegal pesticide residues. This figure increased to 17 in 1989. Included in the shipments were coconuts, pineapples, strawberries and chayotes, among others.

The number of rejections could actually continue to increase as FDA's testing procedures improve, since several of the pesticides we use on our crops exported to the United States are not monitored by FDA. These include such U.S.-made pesticides as dalaapon, ferbam, phorate, MSMA, PCNB and propiconazole, used on one or more of the following crops bananas, coffee, pineapples.

One last point concerning problems with the regulatory system. Costa Rica requires that all imported pesticides are registered in the country of origin. This provision is intended to help ensure that other governments, such as the U.S. government, have considered the potential risks posed by the pesticide. However, the "origin" country often is merely, a transshipment country.

For example, a pesticide such as haloxyfop may be exported to Costa Rica from the United States where it is NOT registered, through a country such as Columbia where it IS registered, and Costa Rica will consider the origin as being Columbia. Thus, the import is legal. However, since Colombia's regulatory system is plagued by many of the same problems that we have, the information which is available is not complete.

1.3. Regulatory actions

Both pesticide residue problems on exported commodities and pressure from international organizations has resulted in Costa Rica taking regulatory action against several problem pesticides. In fact, the country has banned 16 pesticides. Nine of them are on the "Dirty Dozen" list of pesticides targeted by international non-governmental organizations for removal from the world market. These include aldrin, dieldrin, endrin, 2,4,5-T, DDT, toxaphene, DBCP, EDB, and pentachlorophenol.

Most recently, in January, 1991, our government banned all but the wood preservative uses of 2 other "Dirty Dozen" pesticides - heptachlor and chlordane (made only in Memphis, TN) - because of the risks posed to humans and the environment. In particular, the Ministry pointed to the ability of these pesticides to cause cancer, aplastic anemia and leukemia, and/or accumulate in the tissues of humans and wildlife.

Other pesticides also are banned, including captafol, chlordecone, cyhexatin, dinoseb, lead arsenate, mercurials, and nitrofen. Several of these actions followed the U.S initiative. This demonstrates that information on regulatory actions taken by the U.S. Environmental Protection Agency often sets a standard for worldwide action which protects humans and the environment.

1.4. Lack of Access to Information

One of the primary problems individuals and organizations in Costa Rica face is a lack of information on the toxicity of pesticides. Not only do the Ministries not ask for in-depth data on pesticides during the registration process, but, unlike in the United States, the public has no access to the limited data which are provided. Nor does our government provide even basic fact sheets outlining the potential health and environmental effects of the chemicals.

In short, we are forced to rely on labels which provide mostly use information, and some acute toxicity information. NOT ONE pesticide label in Costa Rica has ANY reference to its ingredient's ability to cause cancer, birth defects, neurological damage or any other chronic effects. These include pesticides such as alachlor, benomyl, chlorothalonil and haloxyfop, all of which are on EPA's lists of pesticides which can cause cancer and/or birth defects.

In fact, these labels are also misleading in another way. Our labeling program requires that color bands be put on pesticide containers according to the ingredient's acute toxicity. This is highly misleading since it means that such potent carcinogens such as benomyl and chlorothalonil have a green color band which corresponds to the least toxic pesticide. This system presents to farmers a false sense of security.

Because of this lacking and misleading information, organizations are forced to turn to the United States for basic information which should be public knowledge. While we are working to try to improve the situation in Costa Rica, I cannot stress enough why it is so important that the United States help distribute information on the toxicity of all pesticides you export to us.

2. PESTICIDE COMMERCE: IMPORT AND FORMULATION

Costa Rica imports almost three times as many pesticides from the United States as from any other country. In fact, in 1987, 44 percent of our pesticide imports by volume, came from the U.S. These pesticides include such highly toxic pesticides as aldicarb, carbofuran, ethoprop, paraquat and terbufos, as well as pesticides posing chronic risks like alachlor, atrazine, benomyl, chlorothalonil and dichloropropene.

All the above pesticides are registered in the United States, although most are considered "restricted use." We also import several pesticides which have been rejected by EPA when their manufacturers have tried to gain registration or food residue tolerances. These pesticides include butachlor, carbosulfan, haloxyfop and prothiophos.

There are no manufacturers of active ingredients in Costa Rica, only formulators. U.S manufacturers exporting to Costa Rica

(often large amounts of technical grade pesticides) include such companies as American Cyanamid, Chevron, Ciba Geigy, Diamond Shamrock, Dow Chemical, DuPont, FMC, ICI, Monsanto, Pennwalt, Rhone Poulenc, Rohm and Haas, SDS Biotech, Union Carbide, and Zoecon. The number of formulators increased between 1984 and 1990 from 9 to 19.

3. PESTICIDE USE PROBLEMS: POISONINGS AND CONTAMINATIONS

In my work, I have reviewed thousands of files on poisonings, spoken to hundreds of workers, and visited countless farms and pesticide stores investigating the use of pesticides.

In brief, I would say my findings show that pesticide use in Costa Rica is out of control.

For example, I have seen the prophylactic, calendar spraying of pesticides with no pests even present. In one five-month season alone, potato and onion crops were sprayed 24 times with fungicides, herbicides and insecticides. We often have two or three crops a year sprayed in this intensive fashion.

Often pesticides are used on crops for which they are not registered and on several occasions, we have found pesticides which are not even registered for use in Costa Rica. Preharvest intervals are not respected.

I have also seen human poisonings. The most obvious story about human suffering from pesticide exposure is that of the U.S. export of DBCP to Costa Rica for use by workers in our banana plantations and the resultant sterility of these workers.

Since that sad story will be discussed separately, I will point to the fact that other U.S. pesticides such as American Cyanamid's terbufos, Rhone Poulenc's aldicarb, and ICI's paraquat cause the vast majority of all pesticide poisonings, particularly those in the banana plantations. Both aldicarb and terbufos are on the World Health Organization's list of Class 1A "Extremely Hazardous" pesticides. Ironically, a large amount of these pesticides are used on the U.S.-owned banana plantations, such as Standard Fruit Co. (Dole), Bandeco (Del Monte), and Chiriqui Land Co. (Chiquita).

In 1988, two 15 and 16 year old boys died from exposure to terbufos while working in the banana and sugar cane plantations. Hundreds of workers have experienced paraquat burns to their back, legs, eyes and genitals resulting from leaking backpack sprayers and poor mixing and loading practices, especially in the banana fields. Paraquat was responsible for 35 fatal occupational poisonings in the 1980's. In just one region of the country in 1987, aldicarb caused 113 (34 percent) of the documented pesticide poisonings among the paid workers for which a specific pesticide was determined to be at fault.

Heptachlor, banned for all but one use in both the U.S. and Costa Rica, was found in 90 percent of samples of human adipose tissues.

Many poisonings result from the fact that workers rarely use protective clothing because of the hot and humid climate and because of the expense. This is important since many of the pesticides exported from countries like the United States are used there under controlled conditions. Alachlor is one example. This Monsanto herbicide poses such a high cancer risk to workers, that in the United States it only may be sprayed from an enclosed cab. I only know of one enclosed cab in Costa Rica and it is on a U.S.-owned pineapple plantation.

Through our research on acute poisonings, we have been able to demonstrate problems of misdiagnosis, misclassification and underreporting. Permit me to illustrate to you the problem with underreporting.

In 1983, Costa Rica became the only country in Central America to have a compulsory reporting system for pesticide poisonings. However, to date, the surveillance system has never been implemented fully. For example, in 1987, the Ministry of Health received 242 reports of pesticide poisonings. However, we found twice as many pesticide poisonings just in the hospitalization discharge records of the country, and we have to remember that hospitalizations only correspond to the more severe cases of poisonings. In fact, our research shows that for each person hospitalized as a result of pesticide poisoning, another 10 go to the emergency room.

In another review of occupational pesticide accidents, although we found 1.5 percent of paid agricultural workers had suffered some form of poisoning from pesticides just in one year (1986), we had reason to consider even this extremely high figure as an underestimation. This finding supports the 1990 World Health Organization (WHO) estimates of 25 million occupational pesticide poisonings annually. The WHO figure is based on 3 percent of the workforce suffering some form of pesticide poisoning.

As today it is World Environment Day, it is particularly important to stress the environmental impacts of pesticide use. There have been numerous examples of environmental contamination stemming from the use of pesticides in Costa Rica. Our program has documented 77 cases over the last 3 years involving the death of a wide variety of animals including fish, shrimp, birds, rabbits, cattle, dogs and chickens. These events resulted from the disposal of containers, workers washing their spray equipment in the waterways, and consumption of water contaminated by aerial drift, among other causes. In some of these cases, the human population was also affected.

The use of American Cyanamid's insecticide terbufos (Counter), known here to be highly toxic to fish, caused massive fish kills in the Barra de Matina area on the Atlantic coast of Costa Rica.

just last year. Millions of fish were killed and residents of the area were warned not to drink the water or eat any fish. In the United States, terbufos is known to be highly toxic to fish and is restricted to use by trained applicators, or someone under their supervision. In Costa Rica, anyone can use it.

The insecticide heptachlor, banned only since January, 1990 for all but wood preservative uses, has contaminated bird eggs, molluscs (particularly females), meat and fish.

Formulation of your products has also taken its toll on our environment. Discharges from one facility in Chomes, in the western Puntarenas province, which has formulated Velsicol's heptachlor, American Cyanamid's terbufos and Rhone Poulenc's ethoprophos, has resulted in repeated fish and shrimp kills and water contamination of the Lagarto River. Not only do people eat these dead fish and shrimp, but they also depend on being able to fish for them for their livelihood. The river also empties into the Nicoya Gulf, a once productive fishing area, which has seen a steady decline in water quality over the years as a result of such discharges, among others things.

Overall, no government program includes the routine monitoring of pesticides in waterways, despite the fact that workers wash their spray equipment in water, factories discharge their formulation wastes, and pesticide residues are in the runoff from farms.

4. CONCLUSIONS:

The problems I have outlined today are not only inherent to Costa Rica, but to all countries in Central America. As a result of this situation, I would like to say what I said before. It is critical that the pesticide export legislation offered by Senator Leahy passes, and that it passes this year.

This bill takes a major step towards improving the global pesticide problem. As I have shown, the use of pesticides has caused serious poisonings of humans and the environment throughout my country and the other countries of the region. We are working to try to stop the problem and help get our region off the pesticide treadmill, but we need your help.

In particular, there are three sections of this legislation that would improve the situation in countries like Costa Rica. I note that they are the same as, or very similar to, provisions for which we have been calling for years and for which we will continue to call.

1. Prohibiting the export of banned pesticides.

We have been trying to get bans on the import of pesticides banned in the country of origin for a long time. We would be helped by your requirement that ALL pesticides exported from your country have a registration or food residue tolerance.

2. Prior Informed Consent.

Prior Informed Consent provides the necessary and currently lacking information to our governments on hazardous pesticides and will serve as a tool to improve the decision making process. It also will be an important handle for organizations to hold their governments accountable for the decisions made to allow particularly hazardous pesticides into their countries.

3. Informed exchange.

Your country's actions will also provide important information developing countries need to be able to get our countries off the pesticide treadmill. This includes information on alternative methods of pest management, including non-chemical methods

However, there are also other provisions that I would like to see addressed, either now, or in future years.

1. I would urge you to require full registration of all pesticides exported from your country since no developing country has the capacity (whether professional or financial) to review toxicity and environmental fate data on an in-depth basis.

In the absence of that, I hope you will include under the PIC section those unregistered pesticides that only need to gain a food tolerance. This is because it is important for countries to know that in order to get a tolerance, no environmental fate data are required and the chemical may theoretically still pose a high environmental or occupational, although not dietary, exposure risk.

2. Countries should not be able to export dangerous pesticides to those countries that cannot control the use of these poisons. We might face problems by not getting certain pesticides. However, after pesticides have been banned in the past, we were able to handle pest situations without those chemicals. Your information on alternatives, together with existing Integrated Pest Management (IPM) programs in Central America, will certainly provide better tools for working towards a sustainable agriculture policy.

The CHAIRMAN. Thank you very much, Doctor. Why don't we hear from Dr. McConnell first and then I will have questions for both of you.

Dr. McConnell.

STATEMENT OF ROB McCONNELL, MOUNT SINAI SCHOOL OF
MEDICINE, NEW YORK, NY

Dr. McCONNELL. Good morning, Mr. Chairman.

TWO ISSUES

Today, I would like to discuss two issues with you:

First, how pesticides present a threat to the health of workers and communities in developing countries; and second an example of the pesticide related public health disasters which the Circle of Poison legislation would help prevent.

APPLICATORS OF HAZARDOUS AGRICULTURAL PESTICIDES IN LATIN
AMERICA FACE PROBLEMS DIFFERENT FROM U.S. APPLICATORS

In the United States, applicators of hazardous agricultural pesticides are protected by enclosed cabs on spray tractors and automated mixing and loading units, coveralls and respirators, and regular medical examinations. It is a different story in Latin America. With your permission, I will illustrate the problems with a few slides.

[Slides shown.]

Dr. McCONNELL. In Latin America, farmers are likely to use a backpack sprayer which leaks and to apply insecticides without gloves, coveralls or shoes. This Costa Rican worker is mixing mancozeb by hand, and these women on a farm near Mexico City are applying mancozeb. This fungicide was recently restricted in the United States because it causes cancer. It also causes birth defects, and it is readily absorbed through the skin of barefoot women.

In developing countries, rural transportation is primitive and pesticides are repackaged and stored in ways which are hazardous to bystanders, including the children in this banana plantation warehouse, and to workers.

OBSERVATIONS ON PESTICIDE POISONING IN LATIN AMERICA

The most hazardous insecticides which cause most immediate poisonings in the developing world are chemical cousins to the nerve gases of such concern during the Persian Gulf war. These insecticides are readily absorbed through the skin. Blurred vision and vomiting are common symptoms of insecticide poisoning among farmers, and difficulty breathing, seizures and death may occur in severe poisonings. Although there is treatment for insecticide poisoning, few rural health centers I have visited in Latin America have the drugs necessary for treating severe poisonings.

Where agriculture is mechanized, mixers and loaders have extraordinary exposures to undiluted pesticide concentrate. I found that half the new mechanics at one large Central American crop dusting airport were poisoned severely enough to require medical treatment during their first year on the job. One of the most haz-

ardous pesticides used at this airport was parathion, a pesticide being reviewed for possible removal from the U.S. market.

Studies of cotton workers in Mexico and of agricultural workers in Sri Lanka, Malaysia and Nicaragua show that between 3 percent and 15 percent are poisoned every year. Some pesticides have even returned to poison U.S. workers. Florists in the United States have been poisoned by pesticides on flowers imported from Colombia.

Because pesticide application in the field does not require much skill or strength, it is a job often done by children. Almost 20 percent of the 1,200 yearly pesticide poisonings reported by health workers in one region of Nicaragua involved children under 16. There are more yearly deaths in that region from pesticide poisoning than from malaria.

Community residents in areas near pesticide treated fields may also be exposed to pesticides from fruit, pesticide drift, or from the reuse of pesticide barrels for water storage, a practice which is common in Latin America. This barrel contained toxaphene, which causes cancer, and methaparathion, an extremely toxic insecticide. Our group found pesticide-related illness among people living next to cotton fields sprayed with parathion.

The hazards of pesticides are not confined to Latin America or to immediate poisoning. This package of heptachlor, a cancer-causing pesticide, is sold to the general public in Thailand for ground spraying for insect control, a use which is banned in the United States. I will have more to say later about heptachlor.

This boy in the Philippines was spraying butachlor into the wind. The label, which I have here, says "avoid skin contact." This pesticide, made by Monsanto in Iowa here in the United States, has been refused registration for use in the United States, but it is exported to the Third World.

AN EPIDEMIC OF POISONING WITH FURADAN

In 1987, I witnessed a major epidemic of poisoning with Furadan,⁵ sold by FMC, Philadelphia, Pennsylvania. During June and July 1987, just in the region served by a CARE/American Friends Service Committee demonstration project in which I was working in Nicaragua, 548 cases of poisoning were reported by health workers. However, only one in eight pesticide poisonings was actually reported. We believe that over 4,000 cases of poisoning occurred during just this 2-month period among a total population of less than 650,000 people. For comparison, this is more cases of pesticide poisoning than are reported yearly in the entire State of California.

Almost half of these epidemic cases were caused by Furadan, which has long been an important source of poisoning in this region. Furadan, incidentally, has replaced DBCP on Nicaraguan banana plantations, where many poisonings continue to occur.

However, a major reason for this epidemic poisoning was the sudden appearance of a powdered formulation of Furadan. Powdered Furadan is a restricted pesticide in the United States be-

⁵ Furadan is a registered trademark owned by the FMC Corporation. Registration No. 830,459 dated June 20, 1967; Registration No. 1,007,267 dated March 25, 1975.

cause it is so hazardous and can only be used with respirators, protective gloves, goggles and long-sleeved clothing. The powder was inhaled, resulting in virtually complete absorption of Furadan. Workers were overcome with headache, blurred vision, abdominal pain, and uncontrollable vomiting and shortness of breath. I helped care for an entire class of students at an agricultural high school, all of whom were poisoned after applying Furadan by hand. Almost 20 percent of all people poisoned in this epidemic were under 16 years of age.

THE GLOBAL PROBLEM OF PESTICIDE POISONING

As you mentioned, recent estimates are that there are between 3 million and perhaps as many as 25 million cases of pesticide poisoning yearly worldwide, resulting in at least 200,000 deaths. Ninety percent of these poisonings and over 99 percent of the deaths are estimated to occur in the developing countries.

PERMANENT HEALTH EFFECTS OF PESTICIDE EXPOSURE IN DEVELOPING COUNTRIES

I will mention just a few documented chronic effects of pesticide exposure. Recent studies in Central America have shown that long-term impairment of mental function results from pesticide poisoning.

The highest levels of DDT ever found in breast milk were measured from Central American women.

DDT and heptachlor, a chemical cousin of DDT, cause cancer and are exceedingly persistent and damaging to the environment. They concentrate in the food chain and are passed to nursing infants. DDT and heptachlor essentially have been banned for use in the United States. However, it was found recently in blood and breast milk among residents of Oahu, Hawaii, 7 years after an episode in which heptachlor contaminated the commercial milk supply. Velsicol Chemical Corporation, Memphis, Tennessee, continues to produce heptachlor for export to developing countries.

CONCLUSION

The Circle of Poison legislation before you is an important step toward solving the problem of poisoning in developing countries. This law would prevent the export of pesticides such as heptachlor, which essentially are prohibited for use within the United States.

Perhaps the most compelling argument for this law is that it extends the same protection that we guarantee to our own people to the people of countries with whom we trade. Would we not expect the same from them?

I shall be pleased to answer any questions.

[The prepared statement of Dr. McConnell follows:]

Testimony of
Rob McConnell, M.D.,
Mount Sinai School of Medicine
New York, New York

Pesticide Trade and Poisoning in Latin America

Before the Agriculture Committee
U. S. Senate

Washington, D. C.
June 5, 1991

Mr. Chairman and Members of the Committee:

My name is Rob McConnell. I am a physician and faculty member in the Division of Environmental and Occupational Medicine in the Mount Sinai School of Medicine in New York City.

I am a specialist in internal medicine and in occupational epidemiology, the study of diseases caused by work place hazards. From 1983 to 1986 I served as a medical officer in the U. S. Public Health Service assigned to the National Institute for Occupational Safety and Health (one of the Centers for Disease Control). During that period, I developed extensive expertise on pesticide related diseases. From 1986 through 1989 I developed a pesticide poisoning prevention project jointly sponsored by CARE USA and the American Friends Service Committee in Nicaragua. In Mexico, Costa Rica, and Nicaragua I have served as an advisor to the Swedish government's Agency for Research in Developing Countries or to the Pan American Health Organization in the development of pesticide related research and training materials for health professionals. I am the chair of a working group on pesticides for the Regional Environmental Epidemiology Project co-sponsored by the Pan American Health Organization, the U. S. Environmental Protection Agency, the World Health Organization and the United Nations International Program on Chemical Safety. A copy of my curriculum vitae is attached.

Today, I would like to discuss with you 1) how pesticides present a threat to the health of workers and communities in developing countries; and 2) an example of the pesticide related public health disasters which the Circle of Poison legislation would help prevent.

Observations on Pesticide Poisoning in Latin America

In general, highly toxic pesticides are applied in the United States by only a few workers loading crop dusters or tractor drawn booms for application to large extensions of land. Protective devices (such as enclosed cabs on spray tractors and automated mixing and loading units), coveralls and respirators, and access to medical examinations are common. By contrast, the small farmer in a developing Latin American country is likely to mix formulations by hand, to use a backpack sprayer which leaks, and to apply insecticides without gloves, coveralls or shoes. The toxic (carbamate and organophosphate) insecticides, which cause most acute poisonings in the developing world, are chemical cousins to the nerve gases of such concern during the Persian Gulf War. These insecticides are readily absorbed through the skin. Blurred vision and vomiting are common symptoms of pesticide poisoning among farmers, and difficulty breathing, seizures and death may occur in severe poisonings. Although there is treatment for insecticide poisoning, few rural health centers I have visited in Latin America have all the drugs necessary for treating severe poisoning.

I found that half of the new mechanics at one large Central American crop dusting airport (where methyl and ethyl parathion and chlorpyrifos, among other pesticides, were applied) were poisoned severely enough to require medical treatment during their first year on the job. Studies of cotton workers in Mexico and of agricultural

workers in Sri Lanka, Malaysia, and Nicaragua show that between 3% and 15% are poisoned every year. Some pesticides have even returned to poison U. S. workers. Florists in the United States have been poisoned by pesticides on flowers imported from Colombia.

Because pesticide application in the field does not require much skill or strength, it is a job often done by children. Almost 20% of the 1200 yearly pesticide poisonings reported by health workers in one region of Nicaragua involves children under 16. There are more yearly deaths in that region from pesticide poisoning than from malaria.

Community residents in areas near pesticide treated fields may also be exposed to pesticides through contact with foliage, careless safety practices, or through the reuse of pesticide barrels for water storage, a practice which is common in Latin America. Our group showed pesticide related illness occurred as a result of pesticide drift among people living next to cotton fields sprayed with parathion.

An Epidemic of Poisoning with Furadan™

In 1987, I witnessed a major epidemic of poisoning with carbofuran (produced by FMC, Philadelphia, Pennsylvania, and exported to Central America under the trade name Furadan™). During June and July, 1987 just in the region served by the CARE/American Friends Service Committee demonstration project in which I was working in Nicaragua, 548 cases of poisoning were reported by health workers. Subsequent research demonstrated that only 1/4 of all pesticide poisoning is actually reported by the attending health clinic. Therefore, we estimate that over 2000 cases of poisoning severe enough to require medical attention (and an additional 2000 cases which were not severe enough that medical attention was sought) occurred during this 2 month period among a total population less than 650,000. We watched helplessly as a combination of factors outside our control undid years of difficult work developing training programs in safe work practices for workers.

Almost half of these cases were caused by Furadan™. Furadan™ has long been an important cause of poisoning in this region. However, a major reason for this epidemic was the sudden appearance of a powdered formulation of Furadan™. Furadan™ is a restricted pesticide in the United States, because it is so hazardous. Powdered pesticide formulations are readily airborne, resulting in virtually complete absorption of inhaled Furadan™. Therefore, workers in the United States must be protected with respirators, goggles, protective gloves and long sleeved clothing. Unprotected Nicaraguan workers were overcome with headache, blurred vision, abdominal pain and uncontrollable vomiting, and shortness of breath. I helped care for an entire class of students at an agricultural high school who were poisoned after applying Furadan™ by hand. Almost 20% of all people poisoned in this epidemic were under 16 years of age.

The Global Problem of Pesticide Poisoning

Among the reasons that the problem of pesticide poisoning is worse in the third world than in the developed countries is that thirty percent

of the pesticide exports from the United States, the world's largest pesticide producer, consist of products prohibited or restricted in the United States. Often there are no warning labels, or labels on pesticides going to Latin America are in English. In addition, severe malnutrition (especially protein deficiency common in the developing world) may markedly potentiate the toxicity of several hazardous pesticides. High temperatures potentiate the toxicity of some pesticides and enhance absorption of others (for example ethyl parathion, a product which is being examined for possible cancellation of registration by the U. S. Environmental Protection Agency because of its toxicity).

The problem of pesticide poisoning in developing countries is growing. Pesticide use in developing countries continues to increase, while use in developed countries has stabilized, and in some areas is even decreasing. Although reliable statistics on the number of poisonings world wide are not available, a recent report in the World Health Statistics Quarterly estimated that there are between 3,000,000 and 25,000,000 cases yearly world wide, resulting conservatively in 220,000 deaths. Ninety percent of these poisonings and over 99% of the deaths occur in the developing countries. In addition, deaths caused by pesticide poisoning may be attributed mistakenly to other causes in third world countries. In one study of mortality trends in the Philippines a dramatic increase in deaths from conditions which might be confused with organophosphate poisoning was seen among men of working age in rural areas. The increase was not seen among women or among older or younger men (who would be less likely to be exposed to pesticides). The increased mortality among men corresponded to the introduction of pesticides into common agricultural practice and was seen in a seasonal pattern which corresponded to the use of pesticides. The pesticides in widespread use included parathion, monocrotophos, and carbofuran.

Permanent Health Effects of Pesticide Exposure in Developing Countries

I will mention just a few documented chronic effects of pesticide exposure. Recent studies in Central America have shown that long term impairment of mental function results from pesticide poisoning. A study in Colombia suggests that the primarily female work force in the flower exporting industry, exposed to fungicides which cause birth defects, is at risk of delivering children with malformations. DDT is still approved throughout the developing world, supposedly only for controlling mosquitos and other insects which transmit malaria and other disease. However, it is common in developing countries for DDT and other pesticides meant only for mosquito control to be diverted to the agricultural market, where they are applied to food crops, consumed, and concentrated in human fat.

The highest levels of DDT ever found in breast milk were measured in Central American women. The organochlorine pesticides, the class to which DDT belongs, cause cancer and are exceedingly persistent, concentrating in the food chain. One organochlorine, heptachlor epoxide, was found in breast milk from women in Australia whose homes had been treated recently with heptachlor for termite control. Heptachlor epoxide has been found in blood and breast milk among residents of Oahu, Hawaii, seven years after an episode in which

heptachlor contaminated the commercial milk supply. Because of its persistence and the hazard it poses to health and the environment, heptachlor is banned for use in the United States (except for use on underground cable). However, Velsicol Chemical Corporation (Memphis, Tennessee) continues to produce heptachlor for export to developing countries much less capable of controlling its use than we are in the United States. Once overseas, it can be used on food and other crops.

Chronic effects of chemicals, in general, and of pesticides in particular, are difficult to evaluate in the United States, and methods for evaluating chronic effects usually do not exist in the developing world. However, because of their higher exposures, workers and communities in developing countries are at higher risk for cancers of the blood and for other cancers found to be increased in studies of U. S. pesticide applicators.

Conclusions

The Circle of Poison legislation before you is an important step toward solving the problem of poisoning in developing countries:

- This law would prevent the export of pesticides such as heptachlor, which are prohibited or essentially prohibited for use within the United States.
- Recurrences of epidemics like the FuradanTM disaster I described may be prevented by the provisions of the bill which require that the U. S. Environmental Protection Agency inform recipient countries of the toxicity of restricted use pesticides and that the receiving countries consent to shipment of such pesticides. Regulators in third world countries are often desperate for an objective source of information on pesticide hazards in order to develop rational policies to protect their people. Furthermore, many developing countries are looking for ways to get off the pesticide treadmill so as to decrease their debt. Providing them with information on non-chemical alternatives is a major step in the right direction.

Perhaps the most compelling argument for this law is that it extends the same protection that we guarantee to our own people to the people of countries with whom we trade. Would we not expect the same from them?

I shall be pleased to answer any questions.

The CHAIRMAN. Thank you very much, doctor. I want to pick up a little bit on something that you just said, but ask my question of Dr. Wesseling. When I first started working on the Circle of Poison legislation, some said to me that this legislation was paternalistic, that the United States was telling other countries that we would not send them these chemicals, that the United States was telling other countries what is best for them.

If this legislation passes, if we stop the export of these chemicals, are we being paternalistic?

Dr. WESSELING. I think we need your help. We have to collaborate to control both pesticide use and the problems which derive from pesticide use. Developing countries, Costa Rica among them, don't have the capacity to adequately regulate and control pesticides; we don't have enough professionals and we don't have enough financial resources to register those pesticides in an adequate way and to control their use and monitor their effects.

The CHAIRMAN. What provisions in the legislation are going to be most helpful to you in your country? For example, we have pesticides classified as "restricted-use" by EPA. Do you think those are dangerous to workers in your country?

Dr. WESSELING. Well, we think there are three parts which are especially important to us.

First of all, the bill prohibits the export of banned pesticides, which is a very important provision.

Secondly, the PIC provision provides governments with useful information for better decisionmaking regarding the registration and use of pesticides, and it will make these governments accountable for their decisions.

Thirdly, the information on alternative methods of pest management will provide us with an important tool to use to work toward sustainable agricultural development.

But we even would like to go a few steps further and have two specific suggestions. First of all, under the provision which prohibits the export of banned pesticides, we would like to include pesticides which have never been registered in the United States. This is because, as I have pointed out already, we do not have the professional or financial capacity to review the studies which are required for registration. If that is not possible, I would suggest requiring the testing as it now states in the bill, as well as including the never-registered pesticides under the PIC provision.

The second suggestion is that the United States and other countries should not be able to export ANY dangerous pesticides to countries which cannot control their use.

The CHAIRMAN. You mentioned the PIC, or the Prior Informed Consent provision. Do you believe your government would use that provision if it was in place?

Dr. WESSELING. Yes. I think they would find it useful to get the more in-depth information required to be sent under the PIC provision. Also, I do not believe that the PIC provision would be abused. U.S. trade is so important to the Costa Rican and overall Central American economies that it is too dangerous politically to try to get around the bill. You may be interested to know that nongovernmental organizations (NGO's) will be trying to implement the same legislation in other developed countries in the near future.

The CHAIRMAN. Dr. McConnell, I take it from your testimony that you feel the marketing of hazardous pesticides is a public health risk in the Third World?

Dr. McCONNELL. Yes, I think it definitely is, both in terms of the millions of cases of immediate, acute poisoning that occur and also in terms of the unmeasured and largely unmeasurable risk of chronic effects of lower-level exposure both to workers and to communities.

The CHAIRMAN. You mentioned Furadan in Nicaragua. Is that something just unique to Nicaragua or is it something that goes beyond? Do these problems end up being just unique to one or two countries or are they common to many nations?

Dr. McCONNELL. No. I think anywhere that Furadan would be applied in the way that it is in Nicaragua and the way that it is commonly applied in the developing world, you would see large numbers of poisonings. It is no longer a surprise to me, as it used to be, to go into a small agricultural town in Mexico or almost any country in Latin America and talk to farmers in the town square and find that 5, 10, perhaps 15 percent have been poisoned and have required medical treatment for that poisoning.

The CHAIRMAN. If you found these levels of poisonings here in the United States, it would be considered a major health problem, would it not?

Dr. McCONNELL. No question about it. It is a fraction of the proportion of exposed people that are poisoned here in the United States.

The CHAIRMAN. Should we prohibit the export of unregistered pesticides? My bill requires that, and some say that goes too far.

Dr. McCONNELL. I think absolutely; I think that is one of the most important provisions of the bill. From a public health standpoint, I think that there may be little difference between banned pesticides and unregistered pesticides. Older pesticides are banned and taken off the market here in the United States. Newer pesticides simply are not registered.

Another disadvantage to exporting unregistered pesticides is that, at least with banned pesticides, information is available in the public record on what the hazards are. For unregistered pesticides—until they are registered—there is no information on what the toxicologic studies have shown. That is largely proprietary information and it is very difficult to get access to that information in order for an underdeveloped country to evaluate the toxicity of unregistered pesticides.

The CHAIRMAN. What about restricted-use products? Should we be getting Prior Informed Consent in a country before that is exported from the United States or are we opening the door to trade abuses?

Dr. McCONNELL. I think that is another very important provision of the bill. As Dr. Wesseling mentioned, the developing countries don't have a U.S. Environmental Protection Agency with 600 people in an Office of Pesticide Programs to evaluate the pesticides that are coming in. Regulators often are desperate for some independent source of information about the toxicity of pesticides that are being imported in order to develop rational policies, and the Prior Informed Consent would give them some independent infor-

mation aside from what they get now from the chemical companies.

The CHAIRMAN. I am going to yield to Senator Grassley, but let me ask you just one other question; I will ask it of both of you. There is an FAO code on such usage. Why can't we just sit back and say that is enough—just follow the FAO code and not do anything further? Dr. Wesseling.

Dr. WESSELING. Well, first of all, the FAO code is voluntary, and hence it cannot be enforced. Well, in Costa Rica, it is until the moment like that. At this moment, there is no designated authority to see if the code is being implemented, not even if the PIC has been implemented.

And then the other thing is there are very few pesticides on the PIC list. There are less than 60 of the 600 active ingredients which are on the world market. That is another point.

The CHAIRMAN. Dr. McConnell.

Dr. McCONNELL. I think the FAO code is voluntary, and there have been a number of recent studies that have shown that, in practice, it is not working. I think that your legislation could provide a model to the rest of the world for a standard that would be enforceable and that would help to protect workers in a way which the FAO code has not.

The CHAIRMAN. Senator Grassley.

Senator GRASSLEY. Yes. Dr. McConnell, from these slides that you showed over here, this thought went through my mind. You know, as you were showing people working and applying chemicals without any apparent training or protective clothing, my question that went through my mind is about how effective might elementary safety training and protection of workers be in avoiding the problems that we have heard about today from the previous panel.

Dr. McCONNELL. We have some experience in developing training programs for workers in just this sort of situation, and the experience has been somewhat frustrating. There are hundreds of millions of agricultural workers exposed to pesticides around the world, and the prospects of training and equipping those workers under conditions such as you saw here, I think, are just overwhelming.

In addition, in tropical climates, at least, we found that workers have a very difficult time tolerating heavy protective equipment—gloves, respirators—as you can imagine, in countries where working conditions often exceed 90 degrees Fahrenheit in the Sun.

Senator GRASSLEY. Have there been any sort of tests run, though, where there has been some training and elementary protection and there has been less danger as a result of it? I don't dispute the insurmountable job you have that would be there for training all workers and not relying upon that totally, but I guess I am interested in whether or not it has had any impact at all or whether it is just no solution.

Dr. McCONNELL. I think that training is an important aspect of the development of an agricultural industry that will protect workers from poisoning. I certainly wouldn't say that training shouldn't be done, and there have been some controlled studies here in the United States that have demonstrated the effectiveness of protective equipment in decreasing exposure.

There have been very few studies—none, to my knowledge—of this type of equipment in the Third World. And I think an example of where a problem arises is with this epidemic of Furadan poisoning that I described. We put a lot of resources and a lot of time into training workers for several years prior to the time that this epidemic occurred, and it really amounted to nothing in the face of the introduction of an exceedingly hazardous pesticide into this market.

Senator GRASSLEY. I have to say that at least in my State, even any family farmer that is applying his own chemicals has to every so often—like maybe every other year or so, has to go to the USDA Extension Service and go through some training and some classes, and demonstrate that he has at least taken time to consider these issues and to hear them a certain number of hours to get recertified.

And then, of course, for restricted pesticides, there is even a much more strict process that a person would have to go through, or if you are a commercial applicator, much more strict that you would have to. So, you know, in our country, we recognize this as an important aspect even of application of some pesticides that may not be so dangerous.

But all pesticides are dangerous to some degree, so it seems to me like even if we were to restrict the export of some of our most dangerous chemicals, it would still be good for any government—you know, whether our government should be doing it with other governments, I will leave to a later discussion, but it would seem to me like we would want to promote the position that a certain amount of minimum training ought to be used under any circumstances with even the least dangerous of chemicals.

Mr. Chairman, I have no further questions.

The CHAIRMAN. Thank you very much, Senator Grassley.

We will keep the record open for anything further that the witnesses may want to add, but I don't know if there is anything that either one of you wishes to add to what you have said already. Dr. Wesseling.

Dr. WESSELING. Yes. I wish to add something on the last issue which was raised. When we consider only occupational health, when we are talking about training and if it is effective or not effective and we only consider occupational health, we are leaving out all the environmental questions. Those very hazardous pesticides are causing not only occupational health problems, but also environmental health problems such as fish and animal poisonings as well as poisonings of the general population.

Thank you.

The CHAIRMAN. Thank you. Dr. McConnell, did you want to add anything to that?

Dr. McCONNELL. Only that I would echo Dr. Wesseling's comments regarding the chronic effects of pesticides in the developing world, both the environmental effects and the effects not just on workers, but also on communities. And I think although those are difficult to measure, the very high residues of DDT and other similar pesticides which have been found in breast milk and in fat samples from people in communities in the developing world are an indicator of exposure both to those pesticides and to other pesticides

which have not been measured and which have an array of long-term effects, including cancer, birth defects, immunologic effects and chronic neurologic effects, among others.

The CHAIRMAN. Just to underscore how important all this is, The Washington Post today reported that a U.S.-made chemical, a very deadly one, aldicarb, will no longer be used on bananas. They found that it could go through the skins of bananas. The action, of course, allows aldicarb to still be made in the United States, used on other crops, and certainly sent overseas to be used on other foods.

It is interesting because last year the company that makes it agreed that it was too dangerous to be used on potatoes. In 1985, there were reported poisonings in California from aldicarb-tainted watermelons. It has been banned by some of our own States, but it is found in the ground water of about 16 of our States here in the United States.

I have written to EPA about the dietary risks to children. I have urged them to ban this product. Now, it seems that at least the companies are taking the step on one product, on bananas. If the Circle of Poison legislation passed as we have written it, EPA would have to tell other nations about what we have done with aldicarb. If they wanted to, these countries could refuse to even allow aldicarb to come in because of the danger to their own workers.

Dr. Wesseling, this point goes to the kind of things that you were talking about earlier. It would allow your country, for example, to use expertise already demonstrated on the safety matter.

Now, the scope of the problem with banned and unregistered chemicals is underscored with DBCP. Laboratory tests with animals proved the problem of sterility, but that was ignored for 20 years, making human guinea pigs out of some of the workers. We have heard two of those workers here today in what was very powerful, and I think must have been very, very painful, testimony for them.

Today, we export tons of unregistered pesticides that we already know from laboratory tests cause cancer. I hate to think that we must wait for another generation before the tests' predictions show up in the workers. We cannot afford to wait. We must pass this legislation to prevent future generations of workers suffering from cancer or sterility.

As I have noted to my colleagues, we expect to have testimony from some who disagree with my position. But as one Member of the U.S. Senate, I intend to keep pushing until we pass this legislation.

Thank you. We stand in recess.

[Whereupon, at 12:04 p.m., the committee adjourned, subject to the call of the Chair.]

[Material submitted for inclusion in the record follows:]

APPENDIX

JOINT PREPARED STATEMENT OF LINDA FISHER, ASSISTANT ADMINISTRATOR FOR PESTICIDES AND TOXIC SUBSTANCES, ENVIRONMENTAL PROTECTION AGENCY, AND DANIEL D. HALEY, ADMINISTRATOR, AGRICULTURAL MARKETING SERVICE, U.S. DEPARTMENT OF AGRICULTURE

Mr. Chairman and members of the committee, we appreciate the opportunity to comment on behalf of EPA and USDA regarding our position on S. 898 relating to pesticide export reform.

In response to a request for the administration's views on S. 898, the Circle of Poison Prevention Act of 1991, the Department of Agriculture and the Environmental Protection Agency wish to submit this statement for the record of the hearing held June 5 before the Agriculture Committee. We appreciate the opportunity to comment on this legislation.

The stated goals of S. 898 are goals which this administration strongly supports: ensuring the safety of the U.S. food supply, reducing adverse effects from pesticide use in other countries, and promoting fair trade. We doubt, however, that S. 898 will be effective in achieving those goals. This legislation will not eliminate health or environmental problems arising from pesticide use or misuse abroad, and will not necessarily improve food safety in this country.

We have three basic disagreements with S. 898's approach to pesticide exports:

First, and most fundamentally, it fails to recognize that the United States is only one participant in a global market for pesticides, and that unilateral action will not eliminate the production and use of unregistered chemicals in other countries or prevent residues of these chemicals from returning here on imported food.

Second, it fails to distinguish between pesticides which the United States has banned or rejected for health or environmental reasons, and those which simply have no U.S. market or manufacturers that have failed to provide adequate data to support the continued registration of these pesticides.

Third, it imposes our risk/benefit decisions on other countries where circumstances may be very different from those in the United States. A pesticide that poses a marginal increase in the long-term risk of cancer may be unacceptable in the United States, but may be desperately needed in countries where malnutrition ends life long before any possible cancer threat. This violates American principles of consumer choice, provided consumers are fully informed.

We are also troubled by the potential adverse economic impacts of these provisions. The restrictions on pesticide exports will disrupt trade which may be worth several hundred million dollars per year, and which undoubtedly supports a large number of American jobs. These impacts cannot be justified given that S. 898's approach is unlikely to result in significant gains for human health or the environment, either in the United States or in other countries.

Advocates of these provisions cite two principal public policy concerns: first, that countries which export food to the United States are using American-made pesticides not registered in the United States, which therefore may not have been reviewed by the U.S. Government for health and environmental effects; and second, that these pesticides may be sold to developing countries which have little technical or legal capability to obtain relevant health and safety data. We believe that a better approach is an amendment to FIFRA which would allow the United States to participate fully in the FAO/UNEP Prior Informed Consent system. In addition, we offer the following amendments as more effective and less damaging in accomplishing your goals than the provisions now under consideration.

- (1) Prohibit the export of any pesticide which has an active ingredient;

(a) Which the United States has banned or refused to register for human health reasons; or

(b) Which is subject to the FAO/UNEP Prior Informed Consent system, provided the importing country officially objects to receiving it and certifies that it will not be produced or imported by that country;

(2) Require pesticide manufacturers to develop practical analytical methods for detection of food residues of all active ingredients which are unregistered in the United States, but are produced here for export only;

(3) Prohibit the export of a pesticide with an active ingredient unregistered in the United States unless the active ingredient of the pesticide has a tolerance or exemption for a food use under the Federal Food, Drug, and Cosmetic Act (FFDCA), or unless;

(a) The active ingredient of the pesticide is approved for use in a country which is a member of the Organization for Economic Cooperation and Development (OECD) and the data supporting such approval are made available; and

(b) The importing country has not officially objected to receiving the pesticide and has certified that it will not be produced or imported by that country.

Together these improvements to current law would ensure that FDA and USDA have the ability to monitor imported food for illegal pesticide residues, regardless of the origin of the pesticide. The changes would also ensure that these pesticides have been reviewed and approved by a developed country, and that the data supporting the approval are [is] available to potential importing countries to assist their decisionmaking. Moreover, they would accomplish these ends without a significant loss of American jobs.

PESTICIDES AND FOOD SAFETY—THE LARGER CONTEXT

The issues of pesticide exports and pesticide use in other countries are significant, and we believe our proposals, if enacted, would provide the best means of addressing them. However, there are many important issues related to pesticide use and food safety in this country, and we strongly believe that Congress should deal with all of them at this time. The administration advocates a comprehensive approach to pesticides and food safety which would improve our laws on pesticide exports and also address shortcomings of the FIFRA and FFDCA.

The President's Food Safety Plan of 1989 embodied seven fundamental principles for protecting the public's health through ensuring that America's food supply remains safe and free from harmful residues. These principles call for:

- Establishing "negligible risk" tolerance levels which would be applicable to fresh as well as processed foods, moving away from the "zero" tolerance provisions of the Delaney clause;
- Establishing prospectively national uniform pesticide tolerance standards or to maximize the efficiency and effectiveness of our domestic and global markets;
- Requiring periodic reregistration, so that pesticides continue to meet contemporary standards for health and safety;
- Streamlining suspension procedures and redefining what constitutes an "eminent hazard;"
- Revising the cancellation process, replacing the adjudicatory hearing with notice-and-comment rulemaking;
- Enhancing the enforcement provisions of FIFRA, providing for improved authorities and increased penalties for violations; and
- Providing for early and appropriate coordination and consultation among EPA, USDA, and HHS in the pesticide cancellation and suspension process.

We, the primary food safety agencies, EPA, FDA and USDA, are working together and consulting with others in the administration to assess the need for any refinements in the legislative language we sent to Congress last year embodying the Seven Part Plan, and to identify the best approach toward achieving our food safety goals in this Congress. The administration looks forward to working with you to address this whole range of important food safety issues.

OTHER CONCERNS WITH S. 898

We have certain additional concerns with S. 898 which we would like to bring to the committee's attention.

A. Citizen's Suits.—The citizen suit provision of S. 898 differs from such provisions in other environmental laws in certain respects; for example, it allows a citizen action to go forward even if the Federal Government has brought an enforce-

ment case on the same facts. The citizen suit provision is potentially problematic for several reasons and is under review by the Department of Justice.

B. Federal Meat, Poultry, Egg Products Inspection Amendments.—The bill would amend the Federal Meat Inspection Act (FMIA), the Poultry Products Inspection Act (PPIA), and the Egg Products Inspection Act (EPIA) to prohibit the importation of any meat, poultry, egg or egg product into the United States unless the importer of such product identifies to the Secretaries of Agriculture and Treasury, each pesticide chemical known to be or customarily used on, or in connection with the production of such products. The amendment further requires that if the Secretary of Agriculture determines that a sample of the imported product contains a pesticide chemical that was not identified by the importer, the importer must file, with subsequent shipments, the results of analysis for the previously unreported chemical residue and the results of an analysis designed to detect all residue levels of other pesticide chemicals used on or in connection with the production of such products.

We have several concerns with these amendments:

First, the pesticide use and analysis requirements imposed on importers by this bill are unnecessary in view of the "equal to inspection requirements" imposed by the FMIA, PPIA, and EPIA on countries seeking to export such products to the United States. The meat, poultry and egg products laws provide that only such products produced in countries maintaining an inspection system determined equal to the U.S. system are eligible for importation to the United States. To obtain "equal to" status, the applicant country must meet numerous requirements including demonstration of an effective pesticide residue testing program. In addition, all such imported products are subject to additional inspection and testing by the Department. USDA routinely samples and tests such products for pesticide and other chemical residues. In fact, such requirements imposed by the other countries in response to U.S. action would be burdensome to the U.S. industry and hinder our export of such products unnecessarily in view of the testing done in this country. Current inspection and testing systems in place already address pesticide residue problems that may occur in exported products. Improvements to these systems are made routinely, and suggestions for positive changes are welcome.

Second, any amendments to the EPIA that address pesticide use or residues should address only egg products, since FDA has regulatory authority under FFDCA concerning pesticide residues in shell eggs. Whenever shell eggs are imported into the United States, USDA notifies FDA before release of any lot for domestic commerce, including both table use and use in the production of liquid, frozen and dried egg products. This notification is specifically intended to give FDA an opportunity to test such shell eggs for the presence of pesticides and other residues under that agency's monitoring programs.

C. Agricultural Attachés.—We also recommend deletion of the provisions to require Agricultural Attachés to gather information on the customary use of the pesticides in the production of agricultural commodities in foreign countries and annually provide the information to the Secretary of Health and Human Services and the Secretary of the Treasury. Agricultural Attachés are able to give a general overview of the pesticide use but do not have the information to make detailed assessments. Moreover, we estimate that detailed tracking of pesticide use on agricultural commodities exported to the United States would be almost impossible, particularly in the developing world. The only way to determine pesticide use and content accurately would be by testing the commodities themselves. Finally, the additional reporting requirements would necessitate a significant increase in staff and resources, without corresponding benefits, to comply with the added responsibilities.

There are several additional areas where the language of the pesticide export provisions could needlessly complicate their administration and enforcement:

First, the requirements and restrictions imposed on pesticides should be based on the registration status of their active ingredients, rather than the status of individual products.

Second, the bill's provisions should clearly state that pesticides which would not require an experimental use permit for research or experimentation in the United States would be exempt from export controls.

Third, these provisions should not impose Federal sanctions for failure to observe foreign law or contractual requirements, and place the U.S. Government in the position of enforcing these requirements.

We understand that the Justice Department is currently reviewing S. 898 and may express constitutional and legal concerns in a separate report.

CONCLUSION

While the administration does not support S. 898, we agree that the Federal law on pesticide exports needs to be strengthened. We believe our proposals amount to a tough, reasonable set of controls on export of unregistered chemicals. We hope that this committee will consider the administration's approach in the context of a comprehensive approach to pesticide use and food safety. We would welcome the opportunity to work further with you to achieve our shared goals in this area.

PATRICK J. LEAHY, VERMONT, CHAIRMAN

DAVID H. PRYOR, ARKANSAS
 DAVID L. BOREN, OKLAHOMA
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 CHARLES E. GRASSLEY, IOWA

United States Senate

COMMITTEE ON
 AGRICULTURE, NUTRITION, AND FORESTRY
 WASHINGTON, DC 20510-6000

July 15, 1991

William K. Reilly
 Administrator
 Environmental Protection Agency
 Washington, D.C. 20460

Edward Madigan
 Secretary
 Department of Agriculture
 Washington, D.C. 20250

Gentlemen:

On June 5, 1991, the Senate Agriculture, Nutrition, and Forestry Committee heard testimony about the devastation caused in the Third World by U.S.-made pesticides that are banned or unregistered here due to their known toxicity. Two workers sterilized by the now-banned pesticide, DBCP, told their story to the Committee.

Following the hearing, Environmental Protection Agency Assistant Administrator Linda Fisher and U.S. Department of Agriculture Marketing Services Administrator Daniel Haley submitted written testimony on behalf of the Administration for inclusion in the hearing record.

The Administration's objections are essentially the same as those it made last year when Congress debated whether to include a Circle of Poison provision in the 1990 farm bill. Since I have responded to these points in the past, I will not repeat myself here. There are however two basic points in the Administration's testimony I find very troubling.

First, Ms. Fisher and Mr. Haley contend:

We are troubled by the potential adverse economic impacts of these provisions [of the "Circle of Poison Prevention Act"]. The restrictions

William Reilly
Edward Madigan
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on pesticide exports will disrupt trade which may be worth several hundred million dollars per year, and which undoubtedly supports a large number of American jobs.

This is virtually a word-for-word recitation of a letter that Mr. Reilly and then-Secretary Clayton Yeutter sent the Committee on September 25, 1990. It paraphrases an argument frequently made by the National Agricultural Chemical Association and by several U.S. chemical companies, who oppose this and last year's legislation.

The nonpartisan Congressional Research Service of the Library of Congress criticized the industry arguments and survey as: "The bases of the [industry] survey's worst-case estimates of economic impacts appear to be possible, although not necessarily probable, outcomes."

Analysis by the Senate Agriculture Committee also refuted the chemical company survey. It concluded that, under a worse case scenario, theoretically 700 to 1,000 U.S. jobs would be impacted by the legislation -- less than one-tenth of one percent (0.04% to 0.06%) of the jobs in the U.S. chemical industry. It also concluded that this number will be substantially reduced as manufacturers shift to producing safer, registered chemicals and other products.

To show how relatively small this number is, over 10,000 U.S. chemical company manufacturing workers leave their jobs each year (i.e., quit, retire, are laid off or are fired) and 2,500 call in sick at least one day a week.

I have continuously pressed EPA to make its own estimate of the impact of the legislation. To do this, EPA will need a complete list of all unregistered pesticides currently made in the United States that would be affected by this legislation. Despite my repeated requests, neither the Administration, NACA, nor the chemical companies have been able to produce such a list.

Recently, EPA made an unsuccessful effort to compile a complete list of all unregistered pesticides that S.898 would bar from export. In an April 8, 1991 memorandum to Committee staff, EPA reported that Federal Insecticide, Fungicide and Rodenticide Act section 17(a) notices were filed for 75 pesticides under S.898.

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I asked the Senate Agriculture Committee staff to analyze this information. Based upon information provided by EPA and our independent investigation, the staff determined that 38 chemicals -- over half the pesticides on the list -- are probably exportable under S.898 because they have current registrations and/or tolerances.

Of the remaining 37 pesticides on this list, EPA claims that they have no PC Code nor Shaughnessy number for 22 chemicals, which would mean that none of the 22 had been submitted to EPA for a registration application or tolerance petition. However, when the Committee staff reviewed this list, we learned that one of these 22 is Kathon, a pesticide that has both a registration and tolerance. If EPA is mistaken about Kathon, I am concerned that there may be additional inaccuracies on the list.

The remaining 15 chemicals on the list (the 37 minus 22) includes products such as the banned-pesticide DDT which presumably could not be exported if they were made in the United States.

Finally, several chemicals on the list have approved Experimental Use Permits and could presumably be registered fairly quickly if they are safe for U.S. use.

The bottom line is that EPA has failed to compile a complete list of unregistered pesticides that would be barred from export under the "Circle of Poison Prevention Act." The April 8 list is inaccurate and not useful. And a follow-up June 4, 1991 memo from the Agency provides little useful additional information.

We have provided EPA with a partial list of U.S.-made unregistered pesticides that would no longer be exported under S.898. The burden is now on EPA to develop a complete list of all U.S.-made pesticides that would be barred from export under S.898. Until EPA has an accurate list of pesticides and the number of employees that make them, it has nothing except for a chemical company survey, on which to base arguments about job and trade loss. Making unsubstantiated arguments adds little to this debate.

Second, Ms. Fisher and Mr. Haley contend that

[M]ost fundamentally, [the "Circle of Poison Prevention Act"] fails to recognize that the United States is only one participant in a global market for pesticides, and that unilateral action will not eliminate the production and use of unregistered chemicals in other countries or prevent residues from returning here on imported food.

William Reilly
 Edward Madigan
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As you may know, similar legislation was supported last year by an official from the Ecuadorian government who explained her difficulty in monitoring and controlling the use of pesticides entering her country from abroad. This year's legislation has been endorsed by the Agriculture Department of the Philippines for many of the same reasons.

I find the Administration's argument interesting in light of its actions to block the export of other U.S.-made chemicals. In fact the same argument that the Administration uses against S.898 was used in the decision of the Administration to block U.S. companies from exporting chemicals being diverted to process cocaine. With the cocaine chemicals ban, the Administration argued that it was important for the U.S. to take a leadership position to stop the spread of drugs.

The U.S. also took unilateral action against exports used to manufacture chemical weapons. In early June 1991, *The Washington Post* reported that 19 nations decided to follow the United States' unilateral lead. One Administration official called the decision by the other 19 nations a "major breakthrough," saying that "to have taken this action so rapidly is quite an accomplishment."

When it banned the export of chemicals used to make cocaine and chemical weapons, the Administration argued it is important for the U.S. to take a leadership role. Why won't the Administration again use its clout to stop the poisoning of workers, their families and the environment in the Third World?

The "Circle of Poison Prevention Act" also proposes a leadership role for U.S. It directs EPA to: 1) convene international meetings to develop multinational pesticide export control measures; and 2) assist foreign countries in developing better pesticide regulatory and sustainable agriculture programs. Both these steps will help move us toward a safer worldwide export policy.

Twenty-five members of the Senate have cosponsored S.898. If the Administration wants to work with us, we can ensure that future DBCPs do not happen.

Sincerely,


 PATRICK LEAHY
 Chairman

PJL:jh



Republic of the Philippines
DEPARTMENT OF AGRICULTURE
Office of the Secretary
Elliptical Road, Diliman, Quezon City

(200) 224 2682

3 June 1991

Senator Patrick Leahy
Chairman
Committee on Agriculture, Nutrition,
and Forestry
United States Senate
Washington, D.C.

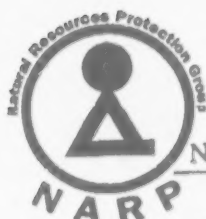
Attention: Ms. Carolyn Brickley

We are writing to express our full support for the passage this year of the "Circle of Poison Prevention Act of 1991." The enactment of this bill will greatly enhance and complement our own efforts in the Philippines to stem the growing problem of indiscriminate pesticide use and its consequences on the safety of human lives and the environment.

An inter-agency Task Force on Pesticide Policy consisting of our Departments of Agriculture, Health, and Environment and Natural Resources is currently working to come up with a clearer and more definitive statement of government policy with respect to hazardous or restricted pesticides, particularly those in the World Health Organization's list of Class 1A or "extremely hazardous" and Class 1B or "highly hazardous" pesticides. We realize that much more needs to be done by our government to make pesticide use information more readily and widely available to farmers and the public in general and to strengthen the enforcement of pesticide regulations. Nonetheless, our task of promoting more judicious pesticide use in the Philippines would certainly be greatly aided by the early passage of legislation in the U.S. (and other exporting countries) which would regulate the exportation of hazardous pesticides and thus make such pesticides less easily available to users in importing countries like the Philippines.

Very truly yours,

V. BRUCE J. TOLENTINO
Undersecretary for
Policy and Planning &
Chairman, Task Force on
Pesticide Policy



SALAMABI BENEVOLENT FOUNDATION مؤسسة الصلابة الخيرية

مجموعة حماية الموارد الطبيعية (نارب)

NATURAL RESOURCES PROTECTION GROUP (NARP)

Arif Jamal

Senator Leahy,
Senate On Agriculture,
Nutrition and Forestry,
US Senate,
Washington, DC

Berkeley June 3, 1991

Dear Sir,

Last month 32 persons died in one day, in the village of Abbadia, Northern Province-Sudan. The tragedy occurred when the deceased were intoxicated with a meal of seed-dressed wheat. This is not the first incident that we recorded, but part of a series of hard facts of life that we have to face annually, and keep asking the futile question: Who's next?

Serving on the board of the "Pesticide Committee", Ministry of Agriculture, in Khartoum for over eight years, and as a director of "NARP", which is an implementing local NGO, I am familiar with the powerful role that is played by companies exporting pesticides.

In a country like Sudan, and many other Third World Countries in Africa, devastated by hunger, starvation and malnutrition, little could be done through internal legislation against aggressive pesticide sales policies. Even worse, rarely could we hold someone accountable for the plight that occurs at the cost of the communities. We strive hard to implement legislation and disseminate information on the seriousness of pesticide abuses, but our efforts alone are not enough. We need an International conscious to guide and facilitate our endeavors.

We urge members of Congress, to vote for "The Circle of Poison Prevention Act of 1991", which was introduced in April. The provisions in this bill will have an enormous impact on our people and our countries. It will certainly demonstrate a ground breaking experience for other European countries, that many of our governments are dealing with, where their export-oriented policies, on pesticide issues, have much to be elaborated upon. Lastly, we appeal for your understanding of our loss and insignificance of struggling for better policies/legislations on our own.

We do appreciate all your efforts in the past, we avail ourselves for more information on the issue. We wish you all the best.

Sincerely yours,

Arif Jamal

Arif Jamal

Director NARP / Fulbright Senior Scholar

P . O . Box 8 2 2 , K h a r t o u m , S u d a n



**NATIONAL
FARMERS
UNION**

June 5, 1991

Hon. Patrick J. Leahy,
Chairman
Senate Committee on Agriculture,
Nutrition, and Forestry
328A Russell Senate Office Building
Washington, D.C. 20510

Dear Chairman Leahy:

I am writing to offer for the record the National Farmers Union's support for S. 898, "The Circle of Poison Prevention Act of 1991". The bill is a long overdue leveling of the playing field between domestic and foreign agricultural producers and a step toward assuring U.S. consumers that their domestic and imported food supply will remain among the safest in the world. On a humanitarian level, the bill affords the same protections to third world farm laborers as the EPA has found to be necessary in this country.

We believe the bill could be further improved with two amendments. First, we would add a requirement for country of origin labeling on food and fiber products. It is one thing for consumers to know that a country allows the use of a particular pesticide on a specific food, and quite another thing to be standing in the grocery store with that product in hand and know whether it came from that country or somewhere in the United States. Without that important information, consumers might "play it safe" and choose not to buy the product, to the detriment of domestic producers.

Second, we would substantially increase the Food and Drug Administration's resources available for import inspections. Funds would be raised through a system of importers paying for inspection services, or user fees. We firmly believe that additional inspections would be necessary to assure adequate enforcement S. 898, as well as current law.

Thank you for your consideration of our views. I look forward to working with you on passage of this important legislation.

Sincerely,

Leland Swenson,
President

Householders for Safe Pesticide Use

PO Box 1209, E. Victoria Park, WA 6101, Australia, tel. 09 458 9738

2 June 1991

Senator Leahy
Chair, Senate Committee on Agriculture,
Nutrition and Forestry
US Senate,
WASHINGTON, DC

Dear Senator Leahy,

We commend you for introducing *The Circle of Poisons Prevention Act* of 1991, which appears to us to be a ray of sunshine in an otherwise largely dark landscape.

In a short letter it is difficult to convey the full extent of the abuse and lack of effective regulation of pesticides in Australia. Sadly, neither regulation nor enforcement of regulation appear to have improved following a recent Parliamentary investigation into agricultural and veterinary chemicals use in this country.

For example, a late 1990 survey of pesticide residues in Western Australian fruits and vegetables revealed illegal use of some chemicals including DDT and the cyclodienes. i.e., dieldrin, heptachlor and chlordane. DDT and the cyclodienes were banned from food production in Australia in 1987, but the cyclodienes, except for dieldrin, continue to be legally used to control termites. Twenty six of 179 fruit and vegetable samples tested in the Western Australian survey revealed organochlorine residues, including on silverbeet (swiss chard - 2 of 11 samples), strawberries (5 of 8 samples) lettuce (4 of 7 samples) and apricots (5 out of 10 samples). While Australian health authorities have prohibited agricultural use of the organochlorines, they have not revoked the Maximum Residue Limits for these chemicals.

Not untypically, none of the growers whose produce revealed evidence of illegal pesticide use in the 1990 Western Australian fruit and vegetable survey was prosecuted.

Also in 1990, when DDT was found to be on sale in a Western Australian country store, the authorities apparently failed to prosecute the offender.

The lack of incentives to cease using the organochlorines in food production in Australia is compounded by inaccurate official information provided to farmers and the general population about the health hazards of these chemicals. The peak Australian medical authority assessing chemical health hazards, the National Health and Medical Research Council (NHMRC), has, in fact, been shown to have provided an inadequate toxicological assessment of these chemicals, partly the result of missing many key publications reporting adverse effects from them. (After considerable public pressure, the NHMRC is conducting a major review of its position on the cyclodienes)

Lax pesticide regulation in Australia occurs against a backdrop of a long history of close liaison between regulators and chemical manufacturers. Until recently there was no public scrutiny of this relationship, including, for example, the various financial sponsorships the regulators have

received from the industry. The two enclosed newspaper articles illustrate that the subject is at last beginning to be probed.

The two enclosed material safety data sheets for chlordane and heptachlor dated 21 January 1991 illustrate the lack of adequate constraints applying to chemical manufacturers in Australia. While an improvement notice which the Western Australian Department of Occupational Health and Safety served on Velsicol forced the manufacturer to reveal some of the toxic inert and contaminants in heptachlor, no such disclosure was made in relation to chlordane. Yet chlordane is known to contain substantial amounts of heptachlor and larger quantities of the same and additional toxic inert and contaminants.

It is not surprising, under all these circumstances, that organochlorine pesticides are being found in almost every Australian woman's breastmilk, often at levels exceeding WHO limits. By comparison US findings are that a high percentage of American women had non-quantifiable levels (less than 1ppb) of these substances in their milk (see Savage 1977-1983).

If past performance of Australian regulators is any indication of what the future holds, it is unlikely that improvements to the regulation of pesticides will take place in Australia without outside intervention.

Yours sincerely,

Naomi Segal

THE WESTERN AUSTRALIAN
FOOD MONITORING PROGRAMME

A SURVEY OF PESTICIDE RESIDUES
IN FRESH FRUIT AND VEGETABLES
IN WESTERN AUSTRALIA
BETWEEN SEPTEMBER 1989
AND JUNE 1990

Health Department of Western Australia
Western Australian Department of Agriculture
Chemistry Centre of Western Australia
Local Authorities of Armadale, Cockburn
Kalamunda, Mundaring, Murray, Swan
and Wanneroo

RESULTS

The Results are presented separately for each group of pesticides and are analysed by number of samples and number of tests. Because some samples contained more than one residue and because more than one test was done on each sample, the total number of tests when residue was detected is higher than the number of samples where residue was detected for each pesticide group.

Organochlorine Pesticides

One thousand two hundred and fifty-three (1253) separate tests for organochlorine residues were performed on various fruits and vegetables from the Perth metropolitan area and country markets.

Even though organochlorines have not been licensed for any agricultural use in Western Australia since 1987, residual levels were still detected in some fruit and vegetables. This may have been due to translocation, when chemicals in the soil are transported into the fruit or vegetable, or to poor cleaning of equipment, or in some cases to illegal use of organochlorines. The trace-back method used in this survey allows this last possibility to be investigated.

Overall, residues of organochlorine pesticides were found in 31 (2.5%) tests but in only one test (0.1%) did the residual level of pesticide exceed half the MRL. The pesticide was chlordane, which was detected in a lettuce in amounts of 0.016 mg pesticide/kg sample (MRL for chlordane in lettuce is 0.02 mg/kg).

No sample exceeded the MRL for any of the seven organochlorine pesticides assayed in any fruit or vegetable, although organochlorine residues were detected in 26 of 179 (14.5%) samples.

The organochlorine contaminant HCB has not been licensed for any agricultural use since 1972 and was not detected in any sample of fruit or vegetable in this survey.

**ORGANOCHLORINE RESIDUES IN FRUIT AND VEGETABLE
SAMPLES BY NUMBER OF SAMPLES AND NUMBER OF TESTS**

Fruit/ Veg	Number of samples tested	Samples with residue detected	Tests* with residue detected	Tests with residue detected >0.5MRL	Tests with residue detected >MRL
silverbeet	11	2	2	0	0
broccoli	12	0	0	0	0
strawberries	8	5	5	0	0
celery	6	0	0	0	0
potatoes	12	1	1	0	0
lettuce	7	4	7	1	0
tomatoes	8	0	0	0	0
apricots	10	5	6	0	0
peaches	12	1	1	0	0
nectarines	12	2	2	0	0
plums	10	0	0	0	0
grapes	12	1	1	0	0
apples	13	1	1	0	0
pears	8	0	0	0	0
cauliflower	10	0	0	0	0
cabbages	12	0	0	0	0
tomatoes# (Geraldton)	1	0	0	0	0
carrots	11	4	5	0	0
sprouts	4	0	0	0	0
Totals	179	26 [^]	31	1	0

* Each sample was tested for seven different organochlorine compounds (see details in Methods).

MRL = Maximum Residue Limit.

Tomatoes were tested as a result of a complaint.

^ Some samples contain more than one residue.
For date of sampling, see Page 2.

LEGISLATIVE ASSEMBLY

Notice of Questions for THURSDAY, 6 DECEMBER 1990

2149. Mr KIERATH to the Minister for Health:

In relation to the joint Health Department, Western Australian Department of Agriculture, Chemistry Centre of Western Australia; local governments of Armadale, Cockburn, Kalamunda, Mundaring, Murray, Swan and Wanneroo *Survey of Pesticide Residues in Fresh Fruit and Vegetables in Western Australia between September 1989 and June 1990* -

- (a) on what basis did the compilers of the survey select specifically 29 tests for pesticide residues to be carried out on each sample of fruit and vegetable;
- (b) were all the pesticides detected in the fruits and vegetables registered for use on the specific vegetables and fruit;
- (c) if no to (b) -
 - (i) which were the detected pesticides not registered for use on the respective fruits and vegetables;
 - (ii) which were the vegetables on which they were detected;
 - (iii) what action is the Health Department taking against the offending producers;
- (d) with respect to each pesticide analysed in the survey, what is the maximum residue limit set for each fruit and vegetable tested;
- (e) with respect to each pesticide analysed in the survey what is the comparison between the maximum residue limits specified in (d) and the "limit of detection" applying in the survey;
- (f) what is the scientific reference for the statement in the report that "the ADI has at least a 100-fold safety margin compared to the no-effect level (NEL) defined from animal studies;
- (g) how were the tested fruit and vegetable samples stored before testing;
- (h) was the storage method likely to affect the results of the analysis;
- (i) what is the Minister's definition of "fresh";
- (j) what were -
 - (i) the pesticides used;
 - (ii) the fruits and vegetables in which they were found;
 - (iii) the number of fruit and vegetable samples in which they were found for which the National Health and Medical Research Council has not nominated a Maximum Residue Limit?

ATTACHMENT 4

(j) (i) (ii)

PESTICIDE USEDFRUITS AND VEGETABLESOrganochlorines

Chlordane and Metabolites	Lettuce, Nectarines
Dieldrin	Carrots, Lettuce, Potatoes, Silverbeet, Strawberries
DDT and Metabolites	Carrots, Apples, Lettuce, Apricots, Peaches, Grapes
Lindane	Apricots, Nectarines

Organophosphates

Chlorpyrifos	Nectarines
Demeton-S-Methyl	Apricots, Peaches
Dimethoate	Brussel Sprouts, Apples, Pears, Apricots, Nectarines, Peaches, Strawberries
Fenamiphos	Cauliflower, Grapes
Fenthion	Peaches, Apricots, Nectarines, Broccoli
Maldison	Apple, Pears, Peaches, Grapes, Celery, Strawberries
Methamidophos	Apple, Pears, Celery, Silverbeet, Broccoli
Parathion Methyl	Brussel Sprouts, Peaches, Silverbeet

Pyrethroids

Cypermethrin	Pears, Lettuce, Tomatoes, Celery, Strawberries
Fenvalerate	Brussel Sprouts, Celery, Cabbages, Lettuce, Silverbeet, Strawberries
Permethrin	Brussel Sprouts, Cabbages, Tomatoes, Celery, Silverbeet, Broccoli, Strawberries

Others

Chlorothalonil

Nectarines, Celery,

Dicofol

Cabbage, Cauliflower,
Nectarines

Endosulfan

Cabbages, Cauliflower, Apple,
Peaches, Lettuce, Strawberries,
Silverbeet, Celery, Tomatoes,
Plums, Nectarines, Potatoes,
Grapes, Broccoli

Iprodione

Cauliflower, Pears

Tetradifon

Cauliflower, Apples, Pears,
Plums, Silverbeet, Strawberries

Chemical industry denies any conflict

THE chemical industry has hit back at conflict-of-interest claims about paying for public servants to go on interstate study trips.

The Householders for Safe Pesticide Use group claimed it was a conflict of interest for some Agriculture Department staff to be sponsored by an industry they were required to control.

This week the Agricultural and Veterinary Chemicals Association of Australia put out a statement in response.

The association said it represented most firms developing, manufacturing and distributing products used to protect agricultural industries and provide safe food.

WA spokesman John Nilson said that while some companies did pay some department expenses. It was all done through official channels and was in the public interest.

If an Agriculture Department official

attended a course, the training was usually of a very high standard and mostly of a scientific, highly technical nature.

Some chemical companies were also approached to bring guest speakers to seminars in WA on a sponsorship basis, which was all perfectly straightforward.

The chemical industry was a global industry with technology changing all the time.

"We all need to keep abreast of developments in other parts of the world," Mr Nilson said.

By chemical companies paying some of the bills it saves the taxpayer a substantial amount.

"Departmental liaison with industry is an integral part of developing strategies that are in the interests of people and the environment."

Mr Nilson said the relationship between industry and the public service was by no means unique to the chemical industry.

Firms paid for Govt freebies

CHEMICAL firms have paid expenses for Agriculture Department staff attending interstate conferences and study tours.

The practice - confirmed in House Parliament - represents a conflict of interest, claims a group urging safe pesticide use.

Independent MP Dr Ian Alexander asked if the chemical industry had paid Agriculture Department officials to attend conferences, meetings.

By Alan TAYLOR

study tours or other excursions, including travel costs, accommodation or meals.

If that was the case, he asked, how could the department remain independent of chemical industry influence.

In a written reply Agriculture Minister Mr Bridge said that chemical companies have occasionally assisted

with travel expenses to interstate technical conferences and study tours.

"There have been no direct payments to officers."

Mr Bridge said a departmental policy established the relationship between its staff and commercial companies providing sponsorship.

The policy required that on each occasion a company was advised that acceptance of support was with-

out prejudice and without advantage to the company.

"The department has a long history of association with industry, with the assistance of funds or favouritism to its recommendations," Mr Bridge said.

But Householders for Safe Pesticide Use group spokesman Mr Legal said there was a conflict of interest that would not be allowed in other countries.

Sunday Times 19 May 1991 p. 15

ST. 26/7/91 p. 10



VELSICOL AUSTRALIA LIMITED

(Incorporated in Illinois, U.S.A.)

P.O. Box 349, Turrumurra 2074, Australia
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Emergency Telephone After Hours (02) 489 6464

MATERIAL SAFETY DATA SHEET

Page 1 of 2

Date of Issue: 21 January 1991

IDENTIFICATION

Product Name:	GOLD CREST HEPTACHLOR 400EC	UN Number:	2995
		Hazchem Code:	3 WE
		Dangerous Goods	
		Class and Sub-risk:	6.1 (b), 3
Use:	TERMITICIDE	Poisons Schedule:	S 6
Physical Description/Properties			
Appearance:	Amber liquid with hydrocarbon odour		
Boiling Point/Melting Point (°C):	138 (xylene)		
Vapour Pressure:	< .25 mm Hg (3×10^{-4} mm Hg for Heptachlor)		
Specific Gravity:	1.14 (6 mm hg for Xylene)		
Flashpoint (°C):	38°C Tag closed cup		
Flammability Limits (%):	Lower 1 upper 7		
Solubility in Water (g/L):	Emulsifies in water		
Other Properties:	NOT AVAILABLE		

Ingredients

Chemical Entity:	CAS No:	Proportion:	Chemical Entity:	CAS No:	Proportion:
Heptachlor	76-44-8	40%	Carbon Tetrachloride	56-23-5	0-4%
Gamma Chlordane	5103-74-2	6-8%	Hexachlorocyclopentadiene	77-47-4	0-4%
Alpha Chlordane	5103-71-9	1-3%	Octachlorocyclopentene	Unknown	0-2%
Nonachlor	5734-49-4	0-1%	Hexachlorobutadiene	87-68-3	0-2%
Chlordene	3434-48-3	0-4%	Xylene	1330-20-7	to 100%

HEALTH HAZARD INFORMATION

Health Effects

Signs & Symptoms of Poisoning: Headache, dizziness, nausea. Severe poisoning progresses to vomiting, muscular weakness and convulsions. Death may result from cardiac arrest. Chronic intoxication may produce convulsions alone, without earlier symptoms. Heptachlor is an insect central nervous system poison, extreme exposure to humans may also effect the central nervous system.

Acute: Swallowed: Liquid is irritating to the gastro-intestinal tract and is harmful if swallowed.

Eye: Liquid and vapour is irritating to eyes

Skin: Liquid is irritating to skin and is capable of causing skin reactions which may lead to dermatitis.

Liquid may be absorbed by skin contact

Inhaled: Vapour is irritating to upper respiratory tract and lungs

Heptachlor has been shown to cause liver damage in some test animals when exposed to exaggerated doses in laboratory trials. There is no information available as to similar effects in humans.

Chronic: The Internal Agency for Research on Cancer (IARC) has concluded that there is limited evidence of carcinogenicity of Heptachlor in animals. IARC considers the evidence of carcinogenicity of Heptachlor in humans to be inadequate. Australian Authorities, including NH & MRC have adopted these views. The IARC has also concluded that Hexachlorobutadiene may cause concern for humans owing to possible carcinogenicity, however, available information is not adequate for making a satisfactory assessment. Studies have indicated sub-lethal bio-accumulation of Heptachlor and its epoxides in aquatic organisms. In humans, a portion of the heptachlor absorbed during exposures is not immediately excreted with the majority, and it can accumulate in fat as the epoxide which is excreted slowly after exposure ceases.

First Aid

Swallowed: Contact doctor, poisons information centre and attend hospital if swallowed. If more than 15 minutes from a hospital induce vomiting preferably using Ipecac syrup APF. Should breathing or respiration stop, commence resuscitation or CPR.

Eye: Immediately hold eyes open and wash continuously for at least 15 minutes – occasionally lifting upper and lower lids.

Skin: Poisoning may occur through skin absorption. Immediately remove all contaminated clothing, including footwear. Wash affected areas thoroughly with water and soap if available.

Inhaled: Remove to fresh air, lay patient down, keep warm and rested if breathing is shallow or has stopped. Ensure clear airway and apply resuscitation if breathing stops.

Advice to Doctors: Convulsions are a sign of serious intoxication, but may be delayed for 48 hours. Treatment is symptomatic, aimed at eliminating the material from the body, controlling convulsions and restoring respiration. If ingested, gastric lavage is indicated followed by activated charcoal powder. If not available, use phenobarbital sodium. Diazepam is recommended, injected intravenously. Large quantities may be required. When convulsions are under control, continue with phenobarbitone (oral) for up to 2–4 weeks.

Morphine or its derivatives, epinephrine and nor-adrenaline are contraindicated.

PRECAUTIONS FOR USE

Exposure Standards: 0.5 mg/m³ – time weighted average exposure standard. Every precaution should be taken to minimise dermal exposure.

Engineering Controls: Use in a well ventilated area – apply mixed dilute emulsion at low pressure and coarse droplet size to minimise spray drift.

Personal Protection: Wear overalls, PVC elbow length gloves, impervious footwear – such as PVC boots, respirator fitted with approved organic vapours cartridge, face shield or goggles, and hat when handling concentrate and mixed dilute emulsion. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each days use, wash protective clothing and equipment. Precautions should be taken to minimise exposure to other personnel on site. Apply mixed dilute emulsion at low pressure and coarse droplet size to minimise spray drift. Care should be taken not to contaminate non target surfaces.

Flammability: Use in a well ventilated area. Store away from direct sunlight.

SAFE HANDLING INFORMATION

Storage and Transport: Dangerous goods class 6.1 – must be transported and stored in accordance with State and Territory dangerous goods regulations.

Spills and Disposal: Clean up all spills immediately – control personal contact by using protective equipment used during application. Contain and absorb onto vermiculite or similar materials and place in suitable container for disposal area to be washed down with water and detergent to remove remaining pesticide. Do not contaminate drains, sewers, streams, rivers or other water courses. Dispose of empty containers and spillages at approved landfill site, in accordance with State and Federal regulations.

Fire/Explosion Hazard: Avoid smoking, naked flames or other ignition sources. When fighting fires, wear self contained breathing apparatus and full protection clothing. Alcohol resistant foam, carbon dioxide or dry chemical extinguishers should be used. Use water to keep fire exposed containers cool.

Protection of Livestock: Do not use on livestock or in areas accessible to livestock.

Protection of Wildlife, Fish

Crustacea & Environment: Toxic to fish. Do not contaminate fish ponds, dams, rivers, streams, waterways or drains. Sub lethal bio-accumulation may occur in aquatic and terrestrial organisms. Heptachlor 400 EC is designed as a residual termiticide, therefore, Heptachlor and its epoxides are persistent in the environment for some time after application.

CONTACT POINT: VELSICOL AUSTRALIA LIMITED
REGIONAL MANAGER

PHONE: (02) 488 9011
FAX: (02) 488 9717

The information presented herein, while not guaranteed, was prepared by technically knowledgeable personnel and to the best of our knowledge is true and accurate. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other or additional considerations.



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MATERIAL SAFETY DATA SHEET

Date of Issue: 21 January 1991

Page 1

IDENTIFICATION

Product Name:	GOLD CREST CHLORDANE 800EC	UN Number:	2995
		Hazchem Code:	3 WE
		Dangerous Goods	
Use:	TERMITICIDE	Class and Sub-risk:	6.1 (b), 3
		Poisons Schedule:	S 6

Physical Description/Properties

Appearance:	Amber liquid with hydrocarbon odour
Boiling Point/Melting Point (°C):	177
Vapour Pressure:	< 23 mm Hg (1×10^{-5} mm Hg for Chlordane)
Specific Gravity:	1.223
Flashpoint (°C):	> 38°C
Flammability Limits (%):	Lower 1 upper 6
Solubility in Water (g/L):	Emulsifies in water

Other Properties: NOT APPLICABLE

Ingredients

Chemical Entity:	CAS No:	Proportion:
Technical Chlordane	57-47-9	80%
Inerts	Unknown	8.5%
Deodorised Kerosene	8008-20-6	to 100%

HEALTH HAZARD INFORMATION

Health Effects

Signs & Symptoms of Poisoning: Headache, dizziness, nausea. Severe poisoning progresses to vomiting, muscular weakness and convulsions. Death may result from cardiac arrest. Chronic intoxication may produce convulsions alone, without earlier symptoms. Chlordane is an insect central nervous system poison, extreme exposure to humans may also effect the central nervous system.

Acute: Swallowed: Liquid is irritating to the gastro-intestinal tract and is harmful if swallowed.
 Eye: Liquid and vapour is irritating to eyes
 Skin: Liquid is irritating to skin and is capable of causing skin reactions which may lead to dermatitis. Liquid may be absorbed by skin contact

Inhaled: Vapour is irritating to upper respiratory tract and lungs

Chlordane has been shown to cause liver damage in some test animals when exposed to exaggerated doses in laboratory trials. There is no information available as to similar effects in humans.

Chronic: The Internal Agency for Research on Cancer (IARC) has concluded that there is limited evidence of carcinogenicity of Chlordane in animals. IARC considers the evidence of carcinogenicity of Chlordane in humans to be inadequate. Australian Authorities, including NH & MRC have adopted these views. Studies have indicated sub-lethal bio-accumulation of Chlordane and its metabolites in aquatic organisms.

RAPALMIRA
PAN-COLOMBIA
Red de Acción sobre Plaguicidas

Apartado Aéreo 1440 Palmira. COLOMBIA
Tel: (57-227)52259 Télex: 05761
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Palmira, Junio 4 de 1991

RAP-0116-91

Senador Leahy, Presidente
Comité sobre Agricultura, Nutrición y Bosques
Senado de Estados Unidos
Washington, DC

SOLICITUD AL SENADO DE ESTADOS UNIDOS, PARA QUE SE APRUEBE LA
"LEY DE 1991 SOBRE PREVENCIÓN DEL CÍRCULO DEL VENENO".

Es necesario para Colombia y demás países latinoamericanos que Estados Unidos prohíba las exportaciones de productos no registrados o cancelados y establezca controles estrictos al comercio internacional de aquellos severamente restringidos en su país. Esta solicitud la hacemos en vista de que las normas sobre notificaciones que funcionan desde hace muchos años no han constituido protección para nosotros; existen muchas denuncias de intoxicaciones y contaminación ambiental sin estadísticas oficiales, pero no es justo esperar que ellas se produzcan porque tampoco existen los recursos para ello.

De los cerca de 250 ingredientes activos de plaguicidas registrados en el país el 7% (representados en 58 formulaciones comerciales) se encuentran en la lista inicial del PIC ("Prior Informed Consent" del Código FAO). El 20% corresponden a las categorías toxicológicas la o lb de la OMS y el 20% se encuentran en la Lista Consolidada de las Naciones Unidas. Además, más de la cuarta parte (64) son reportados por la Agencia de Protección Ambiental EPA como cancerígenos, teratogénicos o con efectos sobre la reproducción y en el 10% (en 24), se han comprobado estos efectos en dos especies de mamíferos.

Las importaciones de dos herbicidas no registrados en Estados Unidos han crecido año a año hacia Colombia: entre 1986 y 1989 se triplicó la importación de butaclor y se quintuplicó la de haloxifop metil. Estos ejemplos muestran cómo predominan los intereses económicos de los fabricantes por encima de consideraciones de salud o ambientales; se aprovechan la ausencia de controles en los países de origen y las legislaciones débiles de los nuestros para traficar libremente con venenos de alto riesgo. Para que se logre poner punto final a este plagui-tráfico es que presentamos al Senado de Estados Unidos la presente solicitud.

Elsa Nivia
ELSA NIVIA
Directora Ejecutiva



Translation of letter from:

Elsa Nivia,
Pesticide Action Network - Latin America
Colombia

REQUEST TO THE SENATE OF THE UNITED STATES THAT IT PASSES
THE "CIRCLE OF POISON ACT OF 1991"

It is necessary for Colombia and the rest of Latin American countries that the United States prohibit the export of products which are not registered or are cancelled, and establish strict controls on the international commerce of those which are severely restricted in your country. We make this request in view of the fact that the rules about notification which have been in operation for the last several years do not constitute protection for us; many reports exist of poisonings and environmental contamination without official statistics - it is not right to hope that they exist since there are no resources.

Of the approximately 250 active ingredients registered in the country, 7% (present in 58 commercial formulations) are on the initial PIC list ("Prior Informed Consent" of the FAO Code). 20% of these correspond to the toxicological category 1a or 1b of the World Health Organization and 20% are on the United Nations Consolidated List [of Products Whose Consumption and/or Sale Have Been Banned, Withdrawn, Severely Restricted or Not Approved by Governments]. Furthermore, more than one quarter (64) are reported by the Environmental Protection Agency (EPA) as being carcinogenic, teratogenic or able to cause reproductive effects, and in 10% (24), these effects are in two species of mammals.

The import to Colombia of two herbicides which are not registered in the United States has increased year after year; between 1986 and 1989, the amount of butachlor imported tripled and the amount of haloxyfop-methyl quintupled. These examples show how the economic interests of the manufacturers override the consideration of health and the environment; they take advantage of the absence of controls in the countries of origin and our legislation to freely traffic poisons which pose a great risk. It is to put a final stop to this pesticide trafficking that we make this request to the Senate of the United States.

Elsa Nivia
Executive Director
Pesticide Action Network



Foundation For
Advancements
In Science And
Education



June 11, 1991

Senator Patrick Leahy
Chairman
Committee on Agriculture, Nutrition, and Forestry
U.S. Senate
Washington, D.C. 20510

Dear Senator Leahy:

I would like to express my support for S. 898, the Circle of Poison Prevention Act of 1990. Included with this letter is the report, "Exporting Banned and Hazardous Pesticides: A Preliminary Review", which is submitted for inclusion in the Hearing Record.

For a decade, the Foundation for Advancements in Science and Education (FASE) has examined the health consequences of environmental chemical exposures in this country and abroad.

A 1990 World Health Organization estimate of 25 million annual pesticide poisoning incidents among farmworkers in the developing nations prompted the Foundation to undertake an examination of current rates of export of banned and hazardous compounds. If pesticide poisoning had become such a significant public health problem in the developing world, it seemed important to determine the extent of our nation's involvement in the proliferation of hazardous compounds in these regions.

The enclosed FASE preliminary report was reviewed by pesticide experts from the academic, medical, and environmental communities (as well as researchers at the GAO and EPA), who found that it provided a more complete picture of current export practices than had previously been available. The data uncovered tends to disprove assertions that our contribution to the global burden of hazardous compounds is negligible.

A study of customs records from three months in 1990 indicated that a total of 18,800,346 pounds of pesticides were exported which were banned, restricted, withdrawn, extremely toxic, or associated with health effects such as carcinogenesis, mutagenesis, prenatal damage or other adverse reproductive effects. Moreover, this figure -- a rate well over 4 tons per hour -- must be considered conservative due to the fact that records of more than half of all shipments did not identify the specific compound being shipped, but employed only generic terms such as "pesticide".

In addition to halting the export of compounds considered to be too dangerous for use in this country, the prior informed consent provision outlined in S.898 would provide a welcome safeguard for countries where hazardous compounds cannot be safely handled and applied.

Ample documentation exists of the human and environmental damage resulting from the unrestricted sale of pesticides without regard to their toxicity or particular hazards. Your efforts to increase the regulation of such chemicals represent a significant step toward improving the public health in regions of the world with which our nation shares increasing economic, social, and humanitarian interests.

Yours sincerely,

A handwritten signature in dark ink, appearing to read 'C. Smith' or similar, with a stylized flourish at the end.

Carl Smith
Project Director

Foundation for Advancements in Science and Education

SPECIAL REPORT

Exporting Banned and Hazardous Pesticides

A Preliminary Review

Despite a decade of pressure to cease the practice, American chemical manufacturers continue to export pesticides whose use has been forbidden in the United States to foreign countries. In 1985, the World Health Organization (WHO) estimated that approximately 3,000,000 cases of pesticide poisoning were occurring annually, with approximately 220,000 deaths (1). This year, WHO estimated that as many as 25 million agricultural workers in the developing world suffer an episode of pesticide poisoning each year (1). Repeatedly, pesticides have been introduced into the soil, water, and food chain with assurances that they pose no acute health hazards. Repeatedly, further research has demonstrated that not only has their acute toxicity been miscalculated, but the effects of chronic low-level exposure have been grossly underestimated.

The U.S. Environmental Protection Agency (EPA) has the authority to regulate the sale and use of pesticides in the United States: before a pesticide can be sold in this country, it must be licensed, or registered, by the EPA. While registration does not constitute "approval" by the EPA, it means that the agency has determined that a pesticide will not cause "unreasonable adverse effects" on humans or the environment. The EPA may cancel or suspend the registration of a pesticide if further evidence indicates that its use poses unreasonable hazard, or it may restrict the uses for which it may be sold to very specific crops and application practices.

While the slow pace of EPA's evaluation of pesticide compounds has been criticized, even this safety measure is not extended to people outside the United States. The EPA does not have the authority to prohibit the export of canceled or suspended pesticides; neither may it forbid the export of restricted-use pesticides — which may be equally hazardous in the hands of untrained applicators — or new compounds which have never been granted registration. Consequently, literally millions of pounds of pesticides which have been determined to be unsafe for use in this country are being

shipped to foreign ports.

Although this problem has received wide attention, it is extremely difficult to obtain accurate, current information regarding which compounds are being sold and where they are being shipped. Chemical manufacturers report annually to the EPA which compounds have been exported, and the quantities exported, but this report does not tell where particular compounds were shipped. Prior to exporting an unregistered compound, a U.S. exporter must provide



According to U.S. Customs documents obtained by FASE, American pesticide manufacturers are exporting extremely toxic and U.S.-banned pesticides to developing countries at a rate of at least 25 tons each hour.

EPA with a statement from its foreign purchaser acknowledging an awareness that the pesticide cannot be sold in the U.S. These notices provide information regarding the name of the product shipped, its active ingredient, and its destination, though not the quantity.

Neither of these data bases are part of the public record. The EPA has published lists of unregistered compounds which have been exported, but the quantities and destinations have not been revealed. Moreover, a team of

investigators from the U.S. General Accounting Office (GAO) found the various sets of EPA data to be extremely difficult to reconcile, and to lack precise chemical descriptions regarding the specific compounds shipped (2).

The most complete data regarding current pesticide exports which can be obtained by the public are U.S. Customs records. Although these too can be frustratingly cryptic and vague, in some cases they provide specific accounts of which compounds have been exported, by whom, and the country of destination. Consequently, while awareness of the problems and ethical considerations of shipping dangerous chemicals to the Third World is high, defining the scope of the problem, the identities of the manufacturers, amounts of the chemicals shipped, and specific destinations, have remained elusive questions.

In an effort to examine these and related issues, this past year FASE researchers were able to obtain several thousand pages of documents pertaining to U.S. Customs records of chemicals exported from all U.S. ports between March and May 1990 (3). In most cases the manufacturer, the chemical descriptions and even the destination were either unclear, obscured or concealed by code words and acronyms. However, through extensive investigation and cross-checking it was determined, for example, that more than 6,075 tons of pesticides classified as extremely toxic, including cancelled compounds such as mirex, heptachlor, and chlordane were shipped to countries such as Guatemala, Brazil, and Sri Lanka and scores of other foreign ports. An additional 2,750 tons of pesticides known or suspected to be mutagens or carcinogens or to cause reproductive or prenatal effects were shipped.

The findings regarding chlordane are significant. Chlordane is regarded as one of the most highly toxic, persistent, and bioaccumulative (tending to accumulate in human tissue, particularly fat) pesticides ever formulated. According to the National Academy of Sciences (NAS), there is no

SPECIAL SUPPLEMENT TO FASE REPORTS

"safe" dosage level for chlordane. As long ago as 1952, researchers found that dogs fed a dosage of 5 mg/kg/day (approximately .004 ounces per day for a 50 pound dog) died in 21-22 days (4). In 1974, the EPA initiated cancellation and suspension hearings on the chemical because it was considered to cause cancer. Most agricultural uses were halted in 1978, though the EPA continued to allow the use of chlordane for termite control.

As reports of home contaminations and the presence of the chemical in food supplies accumulated, public pressure to ban chlordane mounted, culminating in a 1987 petition made to the EPA by the National Coalition Against the Misuse of Pesticides. Rather than enacting a ban, in the fall of 1987 the EPA signed a Memorandum of Understanding with the sole manufacturer of chlordane, Velsicol Chemical Corporation. Velsicol agreed to voluntarily halt domestic sales of chlordane by April 15, 1988.

According to the documents analyzed, however, in the years since withdrawing chlordane from the U.S. market Velsicol has dramatically increased shipments of technical grade chlordane (Technical grade: the chemical in its pure form — usually 95-100% active ingredient — prior to being formulated into commercial products) to foreign ports, from an average of approximately 440 to more than 5,000 pounds per day. One study published in Washington, D.C. in August 1989 noted that Velsicol had exported 397,413 pounds of technical grade chlordane in the 30-month period between January 1987 and June 1989 (5). According to Customs records, in just three months, between March and May 1990, 478,244 pounds were shipped — more than ten times the previous rate.

Chlordane is not the only highly hazardous pesticide to be exported in large quantities. In the same three-month period, Occidental Chemical Co. shipped 717,871 pounds of dechlorane (mirex) — a rate of

almost four tons a day. All mirex products were canceled in the U.S. in 1976, due to concerns regarding carcinogenicity, bioaccumulation, hazards to wildlife, and other chronic effects (6).

Determining the full extent of such shipments is extremely difficult. Chemical companies claim trade secrets as a reason for withholding from public scrutiny complete information regarding the compounds they are shipping to foreign ports. In addition, they may apply to the Treasury Department to have their name deleted and the term "order" noted as the shipper on U.S. Customs records. For example, the single largest shipper in the period studied (over 21 million pounds — over 116 tons daily) was "Order, St. Louis, MO". Monsanto is headquartered in St. Louis; no other company in that city is listed as a pesticide exporter in the period studied.

The only information provided from Monsanto at this writing is that the customs records analyzed do include Monsanto products.

Many companies use generic terms such as "organophosphorous pesticide" (or simply "pesticide"), "weed killing compound", and "insect killer" on shipping documents. Between March and May 1990, Customs records indicate that 123 million pounds of pesticides were exported from U.S. ports; more than half (67 million pounds) are described in terms so general as to prevent identification. Of the more than 21 million pounds of pesticides shipped by "Order, St. Louis, MO" at least 80 percent are described only as "herbicides", "weed killing compounds", etc. Disclosure loopholes such as these make it possible to ship virtually any pesticide — regardless of its hazards — covertly and anonymously.

A considerable number of pesticides exported by U.S. companies during the period studied are suspected to affect the reproductive system or to be carcinogens (see chart (7)). Almost 16 million pounds of these compounds were shipped — an average of more than three tons each hour. (This is actually a conservative estimate of the actual amount, given the large number of records which do not name specific compounds.) The World Health Organization has estimated that 37,000 cases of cancer occur annually as a result of pesticide exposure (1).

At least 1.4 million pounds of paraquat, popular as a cotton defoliant, were exported to various Central American countries during the 90 day period examined. Paraquat, a highly toxic herbicide, is one of the "dirty dozen" pesticides which the Pesticide Action Network (PAN) is campaigning to have banned in all countries. During the period investigated, Customs records indicate that paraquat was shipped to Costa Rica, for example, at a rate of approximately two tons daily. Of this amount, 11 percent is identified as being shipped by Standard Fruit and Steamship Company (the remainder is noted as "order" only). PAN claims that a recent national survey in Costa Rica found that 71% of recorded pesticide fatalities were caused by paraquat (8).

Toxicity Concerns

As a class, organochlorine pesticides such as DDT and chlordane have received considerable attention from environmental interests because they tend to persist in the environment, accumulate in human and animal fat tissue, and can cause cancer (4). In recent years, compounds known as

Known or Suspected Health Effects of Pesticides Exported March-May 1990

CARCINOGENESIS

2,4D
Azinphos methyl
Dichlorvos
Dicofol
Dimethoate
Diazin
Mauab
Picloram
Propazine
Simazine
Methyl bromide
Chloropictin
Chlorothalonil
Chlordane
Chloroquat
Heptachlor
Captao
Trifluralin
Alachlor
Mirex
Carbaryl
Lindron
Amitraz

MUTAGENESIS

Propanil
2,4D
Methyl bromide
Chlordane
Dimethoate
Diazin
Chloroquat
Paraquat
Mauab
Captao
Propanil
Trifluralin
Carbofuran
Lindron
Carbaryl
Bromoxynil

Bifenthrin
EPR-20

Methyl bromide
Chlordane
Chloroquat
Mauab
Mirex
Methyl parathion

PRENATAL DAMAGE

Paraquat
Dicamba
2,4D
Disulfoton
Methyl bromide
Chlorothalonil
Chlordane
Dimethoate
Disulfoton
Diazin
Diphacinone
Chloroquat
Lindron
Mauab
Captao
Trifluralin
Alachlor
Brodifacoum

Dr. Pesticides and Human Health, Vol. 1, William H. Hellebrandt and Suzanne H. Combs, New York: Springer-Verlag, 1989

The General Accounting Office recently noted that most of the 45,000 pesticide products licensed for sale have not been assessed to determine their long-range effects.

organophosphates and carbamates, which are less persistent, have largely replaced organochlorines. In March-May 1990, 18 times more pounds of pesticide identifiable as carbamate or organophosphate were shipped than those identifiable as organochlorine. However, the acute toxicity of many of these compounds is greater than that of organochlorines (9).

Although the problem of acute pesticide poisoning has been largely controlled in the industrialized world, due to improvements in education and protective equipment, acute exposures present the greatest danger to workers in developing countries. The shift to more toxic compounds has resulted in increased rates of poisoning. Moreover, even less is known about acute toxicity than long-term, low-level poisoning (itself incompletely understood): the World Health Organization notes that only 1-2% of the scientific papers addressing pesticides and human health have addressed the issue of acute pesticide poisoning (1).

Organophosphate pesticides were developed in Germany during World War II, and act in a manner similar to nerve gases such as toban, sann, and soman (10). They inhibit cholinesterase enzymes, which assist nerve cells in the transmission of impulses, and can impair central nervous system function. Chronic exposure to organophosphates has been associated with prefrontal lobe impairment (7). Difficulty in maintaining alertness and focusing attention, calculation and memory deficits, lethargy, and narcoleptic-like symptoms [narcolepsia: recurrent uncontrollable desire for sleep] have been associated with organophosphate exposure (11).

"Organophosphate and carbamate insecticides are the most neurotoxic classes of pesticides used in the United States and the most common causes of agricultural poisonings," according to a report from the U.S. Congress' Office of Technology Assessment (OTA) in April, 1990. "Of particular concern are the delayed effects of some of the organophosphate pesticides." Further, the OTA suggests that neurotoxicity, rather than carcinogenicity, may be the greatest concern relative to toxic chemical exposure (12).

"I wouldn't advocate going back to organochlorines," observes Dr. Rob McConnell, an epidemiologist at the Mt. Sinai School of Medicine in New York City who has done field work in Central America. "but the organophosphates and carbamates are not good for the workers. There are more poisonings and there is increasing evidence that chronic neurological damage results from poisoning."

Application Practices Unsafe

In the developing countries, the hazards of pesticide exposure are greatly intensified by the fact that pesticides are handled and applied in ways that would be unthinkable in developed countries. According to the *British Journal of Industrial Medicine*, although 80% of all agrochemicals are used in developed countries, more than 99% of all deaths from acute pesticide poisoning occur in developing nations (13). Adequate safety equipment, including masks, protective gloves, and boots, is rarely available. Moreover, imported equipment may be unbearably uncomfortable in the heat of the tropics.

Labels are not always translated into the language of the country receiving the pesticides, and may not contain complete information regarding restrictions on their use. Often, the workers who actually handle the pesticides cannot read even in their native language. Plastic liners from pesticide barrels have been used as raincoats; empty barrels have been used to collect rainwater for drinking; empty tins as drinking vessels or household implements. Housing may be in the fields, or immediately adjacent to them, thus increasing the likelihood of prolonged exposure. If exposures occur in the field, the usual source of water for rinsing or flushing is pesticide-contaminated drainage water. (14)

A recent report in the *Journal of the American Medical Association* indicates that organophosphate insecticides may persist in contaminated clothing for long periods, poisoning the wearer (15). The World Health Organization recommends that pesticide workers wash work clothing daily and burn any clothing on which pesticides have been spilled (16), a safety standard almost unachievable in developing countries.

Although farm workers in developing countries have become more aware of the hazards of pesticide exposure, the long-term health effects which can result from dosages

too low to cause immediate serious illness are not well-understood. Polly Hoppin of the Conservation Foundation in Washington, D.C. interviewed farmworkers in Guatemala. "If you ask them if they've been poisoned, they'll say 'no'," Dr. Hoppin recalls, "but if you name symptoms typically associated with pesticide poisoning and ask if they've had them, they'll say 'yes'. Without coaxing, they can even elaborate on the connection between their spraying practices and the onset of their symptoms — but they don't think of this as poisoning."

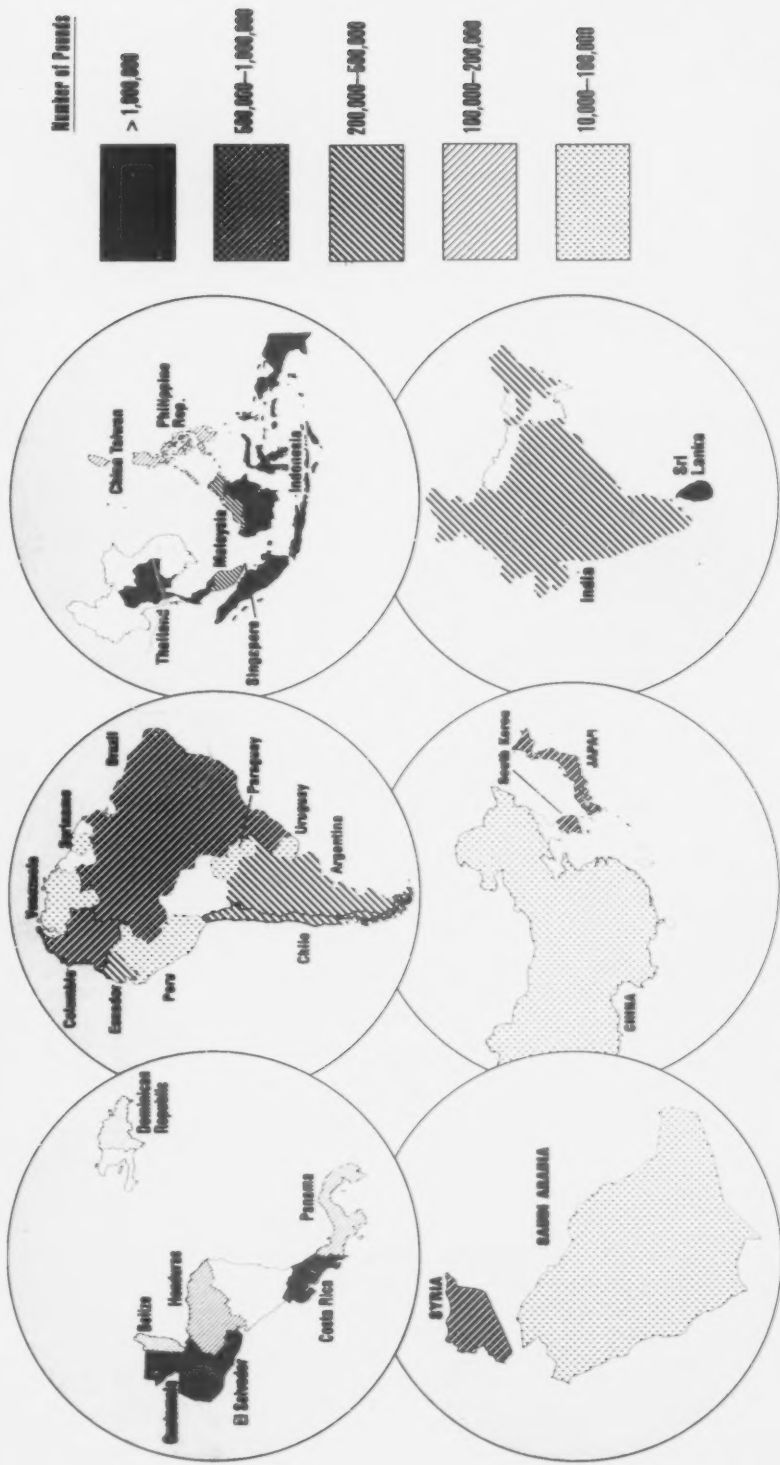
The international trade in banned or highly hazardous pesticides has had other consequences. In July 1988, the *American*



Adequate safety equipment, including respirators, goggles, and protective clothing is rarely available to pesticide applicators in developing countries.

Journal of Public Health reported ingestion of liquid pesticides to be the most common mode of suicide in Sri Lanka, a country where suicides account for 40 percent of deaths in the 15-24 year-old age group (17). An investigation of 407 pesticide-related deaths in an agricultural area of Sri Lanka revealed that 373 (92 percent) were suicides. "Organophosphorous compounds (parathion, malathion) are involved in a majority of poisonings," the journal noted. In 1985, estimates by a World Health Organization task force indicated that there may be two million people hospitalized annually for suicide attempts with pesticides (1).

Countries of Destination, Hazardous Pesticide* Shipments March – May 1990



* Includes pesticides which are canceled, restricted use, unregistered, Class I or suspected to be carcinogens, mutagens or damaging to the reproductive system.

Social Costs

Apologists for the unrestricted flow of pesticides assert that the health losses due to pesticide application are overbalanced by increases in food supplies. However, the majority of the pesticides used in underdeveloped countries are applied to crops that do not feed the locals, but instead are destined for export to consumers in Europe, Japan, and the United States (14). Crops intended for foreign markets, such as coffee, cocoa, coconuts, sugar cane, cotton, and bananas, are primary targets for pesticides. Chemical compounds regarded as too dangerous for use in the United States return to this country as residues on foods and cotton. Although the levels of these residues are within safety standards set by the EPA, many experts question whether these standards provide an adequate margin of protection.

Pesticide use in developing countries involves many serious policy questions. Over time, target pests can develop resistance to particular pesticides. When this occurs it may be necessary to purchase new, more expensive formulations, creating economic strain. In some areas, pesticide overuse has created a population of pests resistant to pesticides, resulting in crop losses ranging from 20 to 100 percent. Subsistence crops as well as cash crops are threatened (18). The long-term effects of pesticide residues on animal life, soil, water, and the food chain are difficult to assess: according to the GAO, most of the approximately 45,000 pesticide products licensed for sale have not been assessed to determine their long-term effects (2).

Pesticide runoff can result in fish kills, a serious problem in regions where fish may be the primary (if not the only) source of dietary protein. Pesticide use has affected fish stocks in rice paddy fields. The Philippines-based Punla Foundation reported: "Previously, the farmer easily provided for his meals by catching fish in the rice field, the last routine in his early morning work in the farm before coming home for breakfast. But not anymore. Fish in the rice fields are disappearing. So are snails, oysters, crabs, shrimps, frogs, and other aquatic creatures (19)."

In investigating pesticide use in Guatemala, the Conservation Foundation's

Dr. Hoppin found that American foreign policy encourages pesticide dependence by emphasizing the cultivation of nontraditional crops with "high-tech" agricultural practices. At the same time, the FDA, urged to action by public concern, is tightening the reins on pesticide residues on imported foods. Thus, Dr. Hoppin reports, U.S. policy places farmers in a difficult bind.

Legislative Efforts

At present, the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) does not give the EPA authority to prohibit the export of unregistered and severely restricted pesticides. As mentioned previously, a foreign purchaser acknowledgement that an unregistered pesticide is being imported is supposed to be sent to the EPA. However, an extensive study of pesticide export practices conducted by the GAO in 1989 found that "export notices lack the

(requiring no tests of unregistered compounds relating to worker exposures or environmental effects). It passed both Houses of Congress and was appended to the 1990 farm bill. However, Senator Leahy withdrew the ban during negotiations by a House-Senate conference committee, when he concluded that conference members intended to weaken it further. He has pledged to re-introduce the legislation next term.

"A legislative strategy is important," says Dr. McConnell. "To begin with, we should bring conditions in the developing countries up to First World standards and eliminate the use of restricted pesticides. This is important as a minimum because the exposures are much greater in the Third World: in California, you rarely find persons applying Class I [the most hazardous] pesticides with backpack sprayers."

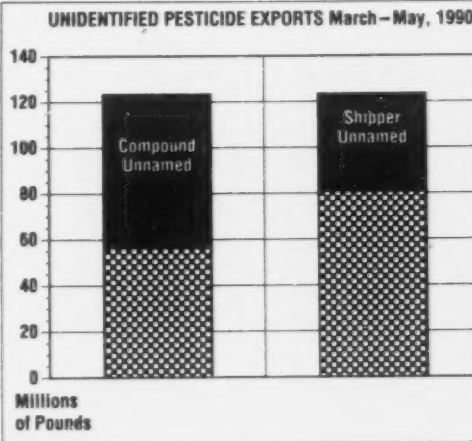
Toward Solutions

As a consequence of the growing awareness among farmers worldwide that pesticide overuse has resulted in increased pesticide resistance, increased pest populations (and pathogens), destruction of natural pest enemies, and environmental damage, some farmers have begun to search for ways to reduce pesticide use. Integrated Pest Management (IPM) is a term applied to the balanced use of biological controls (such as the introduction of insect predators or parasites), cultural practices, and selective pesticides (those that are toxic only to specific target pests).

According to entomologist Dr. David Pimentel of Cornell, biological controls are a good investment. He calculates that for each

dollar invested in chemical pesticidal control there is a \$4 return, whereas \$30 is returned in increased yields when biological control methods are used — a rate about 7 times greater than that for pesticides (20). In addition, he notes that the prices of pesticides will continue to increase due to the fact that they are produced primarily from petrochemicals.

"Agricultural production depends on soil, water, air, energy and biological resources," he writes. "Clearly, for a



Current disclosure loopholes in U.S. Customs records of pesticide shipments make it possible to ship virtually any compound covertly and anonymously.

kind of detailed information that would permit unregistered pesticide products to be properly identified and controlled (2)."

In 1990, Congressman Mike Synar (D-Okla.) and Senator Patrick Leahy (D-Vt.) introduced legislation which would amend FIFRA to forbid the export of compounds unregistered in the United States. The legislation was amended in committee to limit the prohibition to unregistered pesticides for which acceptable residue levels on food have not been established

productive, sustainable agriculture for socioeconomic development, the complex interaction among the resources must be understood for each environmental and social situation so they can be managed as an integrated system." (20)

Future Investigation

The fact that no means currently exist to prohibit or control the export of unregistered and restricted pesticides raises a number of questions. Pesticide misuse in developing countries poses serious and unacceptable hazards to the public health of citizens abroad and in this country as well. Nonetheless, pressure from environmental groups, press reports, and Congressional efforts – including a GAO investigation – have been insufficient to bring about stricter controls on exports. Certain areas in particular deserve further investigation and remedial action.

According to the GAO, even the confidential disclosures made by the chemical industry to the EPA do not contain sufficient data to identify the active ingredients in all pesticides being manufactured and exported. The extreme toxicity of many compounds demands that complete details regarding the active ingredients in pesticides being exported (not merely generic or trade names), their destination, and the names of their exporters should be made a matter of public record. What barriers exist to implementing this policy?

Pesticide manufacturers should not be permitted to entirely disassociate themselves from hazards their products present to their end users. In the case of extremely toxic compounds, sale should be allowed only to those entities which provide evidence that appropriate protective equipment and safety training will be provided to applicators.

Preliminary investigations have revealed that it is difficult to determine the activities of pesticide formulation plants operated by American companies, but located abroad. What quantities of canceled, unregistered, or restricted-use pesticides are being manufactured in these facilities? What steps can be taken to halt the formulation abroad by U.S. manufacturers of compounds considered dangerous in the United States and the export of chemicals intended for use in the formulation of such compounds?

There is no prohibition on the continued manufacture of canceled pesticides. Distributors may act as middlemen and sell and transport these compounds – as well as severely restricted compounds – with no responsibility for the conditions of their eventual use or storage. Although they may



Pesticide workers in Java. According to estimates made by the British Journal of Industrial Medicine, although 80% of agrochemical use occurs in developed countries, Third World countries account for more than 99% of all deaths from pesticide poisoning.

not be sold in the United States, highly toxic and environmentally persistent compounds such as DDT and Silvex are available from American distributors (21). Are there inherent flaws in the structure of the current distribution system which account for an apparent disinterest for fundamental moral and public health questions?

If trained GAO investigators, after carefully analyzing extensive EPA records, still have considerable difficulty identifying pesticide exports, do regulatory agencies in developing countries actually know what substances are being imported? What measures of control exist to ensure that such

materials are handled, stored, and applied safely? FIFRA should be amended to require that labels on pesticide containers be printed in the language of the country where the pesticide is to be used, and include all pertinent information regarding safe application, storage and handling.

In 1989, the National Academy of Sciences reported that nonchemical pest control was competitive with current chemical intensive strategies and economically viable for a range of commercial farming operations (22). Despite this, slow progress has been made in implementing even such technologies as IPM, which may involve

Senegal: A Case History

In the developing countries, no region suffers greater consequences from the mishandling of agricultural chemicals than Africa. In many countries, as much as 70 to 80 percent of the population works in agriculture; the Helsinki Institute of Occupational Health has reported that 11 million cases of pesticide intoxication occur annually in Africa.

Since gaining its independence in 1959, the nation of Senegal has become the most developed country in its area. This growth has resulted in an increasing inflow of industrial and agricultural chemicals: between 1988 and 1989 the total amount of chemicals Senegal imported almost quadrupled, from 156,658 to 587,670 tons.

Recent pesticide imports include such highly toxic, restricted-use (in the United States) pesticides as DBCP (1,2-Dibromo-3-chloropropane), dimethoate, benomyl, trifluralin, captan, and captafol.

FASE Senior Research Associate Ziga Trejak, M.D., recently served as consultant on PCB issues to a team investigating the management of chemical products in Senegal. The study was commissioned by the Senegalese government and conducted by Vincent Zayer, Ph.D., at Hollinger AG (a subsidiary of the Swiss engineering and management corporation Motor-Columbus SA) for the Directory for Cooperation and Humanitarian Aid in Bern, Switzerland.

Among the problems identified in Senegal was uncontrolled spraying of large quantities of pesticides, regardless of the instructions on pesticide containers. Storage and handling practices were found to be very poor, reflecting an unawareness of possible routes of pesticide exposure and the fact that pesticides may contaminate other products. Poor disposal practices were also noted. Although legislation regarding hazardous chemicals exists, it is not sufficiently detailed to be effective and is weakened by inadequate surveillance and enforcement.

"The greatest problem noted was an insufficient stress on continuous education regarding the handling, usage, storage, disposal, and health hazards of chemicals being used," notes Dr. Zayer. "Improvements in this area alone could significantly alleviate the existing public health risks."

selective pesticide use. Are American chemical interests actively affecting policy decisions concerning implementation of IPM systems — or are any U.S.-based activities discouraging IPM systems?

As was discovered in a recent survey of chemical practices in Senegal (see sidebar), improving education regarding the safe handling, storage, and usage of pesticides could greatly reduce the number of poisonings. In many developing countries, inadequate government resources exist to address this task. What cooperative efforts could be established between appropriate government agencies and pesticide producers (the greatest financial benefactors of pesticide sales) to ensure that adequate education and training is provided for those who handle pesticides?

To what extent could programs initiated by the chemical industry — the development of appropriate protective equipment for use in tropical climates, for example — reduce the hazards posed by pesticides? What effects have past efforts along this line had on poisoning statistics?

These issues are complex, and the fact that there is no coherent, readily available source of data regarding them increases the difficulty of resolving them. Clearly, the current research program initiated by the Foundation is only a beginning — as are the considerable efforts undertaken by the GAO, Congress, WHO, Greenpeace, the Conservation Foundation, and others. In cooperation with this growing coalition of environmentalists, academics, and legislators who have determined to halt the proliferation of dangerous pesticides, FASE will be pursuing these issues throughout 1991 and 1992. A panel of scientists and researchers from a broad spectrum of disciplines has been formed for the purpose of compiling and disseminating accurate information regarding the export of banned and highly hazardous pesticides and making policy recommendations for reducing the incidence of pesticide poisoning. Both industry and government need to adopt policies which clearly demonstrate that our public health concerns extend beyond our own borders.

FASE

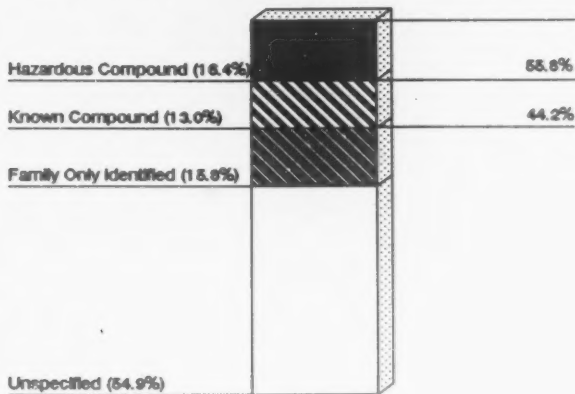
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Distribution of Pesticides Shipped



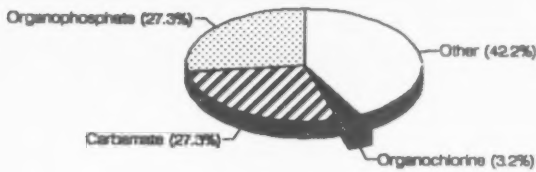
Distribution of Pesticides Shipped: FASE researchers have more carefully analyzed the distribution of pesticides shipped. Of note is the fact that, of those compounds which can be identified by active ingredient, 55.8% (more than 19 million pounds) are either extremely toxic or associated with adverse health or environmental effects. As mentioned in *FASE Reports*, 54.9% of all pesticides shipped are identified in shipping records only in generic terms.

HAZARDOUS PESTICIDES:**RATES OF EXPORT****MARCH - MAY, 1990**

TYPE	3-MONTH TOTAL (LBS.)	TONS/HOUR
BANNED, CANCELLED, DISCONTINUED OR WITHDRAWN	3,549,916	0.8
PLUS RESTRICTED	9,996,300	2.3
PLUS UNREGISTERED	11,080,945	2.6
PLUS CLASS I	11,592,968	2.7
PLUS KNOWN OR SUSPECTED TO BE CARCINOGENS, MUTAGENS, OR TO CAUSE ADVERSE REPRODUCTIVE EFFECTS	19,858,228	4.6
TOTAL	19,858,228	4.6

Hazardous Pesticides: Rates of Export: The over 19 million pounds of pesticides which were described as "hazardous" include compounds which are banned, restricted-use, unregistered, Class I (Extremely Toxic), or associated with cancer, mutagenesis, or adverse reproductive effects. The rate of export of these products during the three-month period examined was 4.6 tons per hour. Banned, cancelled, discontinued or withdrawn compounds account for over 3.5 million tons, a rate of 0.8 tons per hour. These figures represent conservative estimates, in view of the large number of shipments in which the compound was not specifically identified.

Pesticides Shipped by Class



Source: Foundation for Advancements in Science and Education, Los Angeles, CA

Pesticides Shipped by Class: The shift toward the less-persistent organophosphate and carbamate pesticides – an effort to avoid the long-term environmental and biological effects of organochlorine pesticides – was well-documented. Among those compounds which could be identified by pesticide class, 54.6% were either carbamate or organophosphate. This is a matter of concern due to the high toxicity of many of these chemicals; the proliferation of such compounds is not good news for pesticide applicators in the developing world, where adequate protective equipment (waterproof body suits, hats, gloves and boots, as well as respirators and goggles to protect against the most toxic formulations) is not widely available.

Camphechlor (Toxaphene) • Chlordane • Heptachlor

DEMISE

Chloridimeform • DDT • Aldicarb (Temik)

OF THE

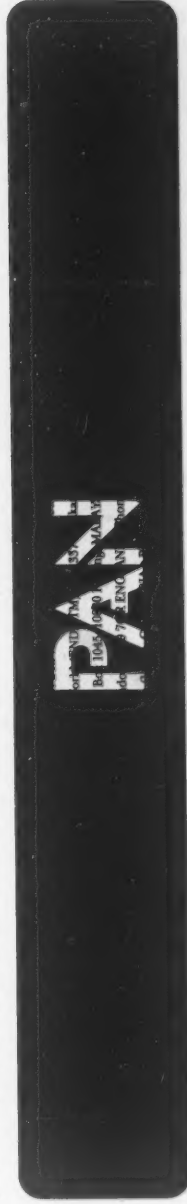
Aldrin • Dieldrin • Endrin • Pentachlorophenol

DIRTY

HCH / BHC • Lindane • Paraquat • 2,4,5-T

DOZEN

Parathion • Methyl Parathion • EDB • DBCP



DEMISE OF THE DIRTY DOZEN

- ◆ **BANNED** — all uses prohibited by final regulatory action due to health or environmental hazards.
- ◆ **SEVERELY RESTRICTED** — most uses prohibited due to health or environmental hazards, certain specific uses remain authorized.
- ◇ **UNREGISTERED** — no registered uses, but not explicitly banned.
 - 1) voluntarily withdrawn by manufacturer
 - 2) never registered for use
 - 3) unregistered
- NO SYMBOL — not banned or severely restricted, may be registered or unregistered.

See back of chart for more information about these definitions.

ABOUT THIS CHART

The 1991 "Demise of the Dirty Dozen" chart highlights bans and severe restrictions on the Dirty Dozen pesticides in 70 countries. It also includes limited information on unregistered pesticides, e.g., pesticides that were withdrawn by the manufacturer, never registered, or whose registration has expired. Unregistered pesticides are increasingly common, partly because manufacturers often withdraw a product or allow its registration to lapse to avoid the negative publicity which accompanies an outright ban. The incidence of unregistered pesticides is likely higher than indicated by this chart, because information on unregistered pesticides is less readily available than documentation of bans.

The effectiveness of pesticide bans and restrictions differs greatly between countries, due to widely varying levels of enforcement. While such actions are sometimes quite effective, illegal use of banned or restricted pesticides occurs in all countries, in some it is quite common. Still, the frequency of regulatory actions against the Dirty Dozen pesticides demonstrates widespread international concerns about their hazards.

ABOUT THE DIRTY DOZEN

In 1985, the Pesticide Action Network (PAN) launched the Dirty Dozen Campaign to target a list of particularly hazardous pesticides for strict controls, bans, and ultimately elimination. The goals of the Campaign include ending the use of the Dirty Dozen pesticides wherever safe use can not be assured, ensuring that human and environmental health are considered foremost in all pesticide policy decisions, eliminating double standards in the global pesticide trade, and generating support for research and implementation of sustainable pest control methods.

PAN International participants selected the Dirty Dozen pesticides based on criteria that included: hazards to human or environmental health, evidence of widespread use, and resulting harm, bans in existing countries, and their value as examples of problems caused by pesticide dependence. Dirty Dozen pesticides are banned or unregistered in many countries because of their known hazards. Yet many are still widely promoted and used, especially in developing countries, where weak controls and dangerous working conditions make their impact even more devastating.

Certain pesticides were grouped together on the original Dirty Dozen list because of their closely related chemical structures; these pesticides are also grouped together on this chart. At the 1986 PAN International meeting, aldicarb was added to the Dirty Dozen list, bringing the total to 18 individual pesticides, grouped into a "baker's dozen" of 15.

WHAT YOU CAN DO

RESEARCH, MONITOR, AND PUBLICIZE...

- Production, trade, use, and disposal of pesticides in your country
- Pesticide poisonings, spills, and contamination
- Violations of national pesticide regulations and the FAO Code of Conduct on the Distribution and Use of Pesticides
- Safe and sustainable alternatives to pesticide use

INFORM AND EDUCATE...

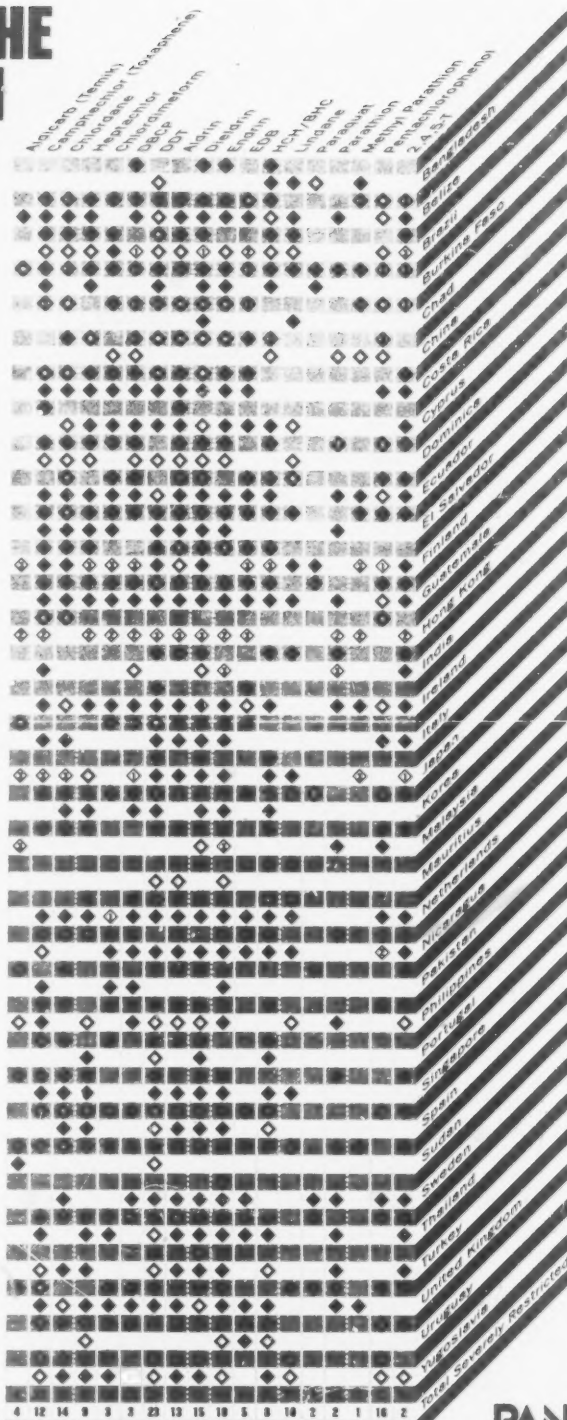
- Representatives of government, industry, schools, and the media about pesticide hazards and safer alternatives
- Other communities and groups (including your PAN Regional Center) about your findings and your work
- The International Register of Potentially Toxic Chemicals about pesticide bans and restrictions in your country

ORGANIZE...

- Meetings, demonstrations, and other events to publicize your concerns
- With other citizens' groups to build alliances
- With workers to press for workplace safety and the right to know about occupational hazards
- With consumers to demand safe food and environmental protection
- With farmers to demand support for sustainable agriculture

PRESSURE...

- Governments, industry, universities, and farmers to research and promote alternatives to pesticide use
- Governments and industry to adhere to the FAO Code of Conduct on the Distribution and Use of Pesticides
- International lending institutions to stop promoting and subsidizing pesticide dependence
- Exporting countries to tighten controls on pesticide exports
- Markets to sell organic or unimproved products



PAN

Published 4/91, for PAN International by PAN North America Regional Center, 965 Mission St., 8354, San Francisco, CA 94103, USA

ABOUT PAN INTERNATIONAL

The Pesticide Action Network (PAN) is an international coalition of citizens' groups and individuals who oppose the misuse of pesticides and support reliance on safe, sustainable pest control methods. Established in 1982, PAN currently links over 300 organizations in some 50 countries, coordinated by six Regional Centers. Because PAN is a network, no individual can direct or represent the entire coalition. Participants are free to pursue their own projects to further PAN's objectives, and benefit from their access to the information and resources of the network. PAN groups welcome interest and participation in their activities. For more information, contact the PAN Regional Center nearest you (address, s on front cover).

DEFINITIONS USED FOR CHART

BANNED: a pesticide which has been prohibited nationally for all uses by final government regulatory action due to health or environmental hazards.

SEVERELY RESTRICTED: a pesticide which has been prohibited nationally for most uses by final government regulatory action due to health or environmental hazards, but for which certain specific uses remain authorized.

UNREGISTERED: a pesticide which has no registered uses, but has not been banned by final regulatory action. The status of each pesticide listed as unregistered on this chart is indicated by one of the following numbers:

- 1.) Voluntarily withdrawn by manufacturer
 - 2.) Never registered for use
 - 3.) Unregistered (registration may be lapsed or suspended, or exact status may be unclear)
- The definitions for "banned" and "severely restricted" used here are those used by major references on the subject. They were adapted from the fourth issue of the Consolidated List of Products Whose Consumption and/or Sale Have Been Banned, Withdrawn, Severely Restricted or Not Approved by Governments (UN Consolidated List). The definition of "severely restricted" has been extensively debated. PAN participants advocate adoption of a definition which includes restrictions limiting use to special classes of workers, or to application who are specially trained, equipped, or licensed. Because such restrictions are common for the most acutely toxic pesticides, adopting such a definition would result in more pesticides being classified as severely restricted. Many pesticide companies have lobbied strenuously to maintain the narrower definition used here.

SOURCES USED FOR CHART

Consolidated List of Products Whose Consumption and/or Sale Have Been Banned, Withdrawn, Severely Restricted or Not Approved by Governments (fourth edition). United Nations General Assembly, New York, USA, 1991.

List of Candidate Pesticides for Inclusion in the PIC Procedure. Group on Pesticide Regulation Requirements, Food and Agriculture Organization, Rome, Italy, 1990.

Listing of Restricted and Prohibited Pesticides in Countries of the American Region. Ana C. Kimball et al. Pan American Health Organization, Metropet, Mexico, 1989.

Correspondence received by PAN North America Regional Center from PAN participants in 22 countries.

SOURCES FOR ADDITIONAL INFORMATION

- Dirty Dozen Pesticides Fact Sheets. PAN North America Regional Center, San Francisco, USA, 1990.
- The Pesticide Handbook: Profiles for Action (fourth edition). International Organization of Consumers Unions (IOCU), Penang, Malaysia, 1971.
- Circle of Poison: Pesticides and People in a Hungry World. David Weir and Mark Shapiro, Institute for Food and Development Policy, San Francisco, USA, 1981.
- Never-Registered Pesticides: Rejected Toxics Join the "Circle of Poison." Sandra Marquardt et al. Washington, D.C., USA, 1990.
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- The FAO Code: Missing Ingredients. The Pesticides Trust, London, England, 1989.
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- Problem Pesticides, Pesticide Problems. Greta Goldenman and Sarojini Rengam, IOCU and PAN, Penang, Malaysia, 1988.
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- Planting the Future: A Resource Guide to Sustainable Agriculture in the Third World. Meera Nanda, International Alliance for Sustainable Agriculture (IASA), Minneapolis, USA, 1990.
- Breaking the Pesticide Habit: Alternatives to 12 Hazardous Pesticides. Terry Crips, IASA, Minneapolis, USA, 1987.
- Escape from the Pesticide Treadmill: Alternatives to Pesticides in Developing Countries. Michael Hansen, Institute for Consumer Policy Research, New York, USA, 1988.
- *Copies of the UN Consolidated List are available from Raficuddin Ahmed, Under Secretary General for International Economic and Social Affairs, 2 United Nations Plaza, New York, NY 10017, USA.

PAN North America Regional Center will continue to update this chart; please send us new information on the status of these pesticides (address on front cover). Supplementary information is available for this chart, including a summary of the guidelines used to compile the material and a (rated) table listing the stated reasons for regulatory actions and remaining authorized uses. Contact us for copies of these documents, or to order additional copies of this chart.

GREENPEACE ACTION

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Testimony of
 SANDRA MARQUARDT, GREENPEACE ACTION
 FOR THE SENATE COMMITTEE ON
 AGRICULTURE, NUTRITION AND FORESTRY

June 5, 1991

Mr. Chairman and Members of the Committee, on behalf of the three-quarters of a million supporters of Greenpeace Action, I would like to thank you for the opportunity to provide testimony on the international implications of the U.S. pesticide export policy. Through my testimony, I will describe why it is so important for public health and the environment that the "Circle of Poison Prevention Act of 1991" (S.898) pass this year.

I have also enclosed for the record letters of support from other organizations which support the passage of this bill. These letters come from pesticide activist organizations on most every continent - Africa, Asia, Australia, Europe and Latin America and include some of the 72 major national and international consumer, environmental, farmer, human rights, labor and religious organizations which support this legislation. They recognize that this precedent-setting legislation is the right way to attack the problem of pesticide use and poisonings in the developed and developing world alike.

Greenpeace Action commends Senator Leahy for introducing "COPPA '91" for the following primary reasons. The bill:

- halts the export of pesticides too toxic for use here or on crops intended for domestic consumption
- improves information exchange and controls on registered, yet highly hazardous pesticides
- provides information on alternative methods of pest management, and,
- improves the safety of food both here and overseas.

We look forward to working toward the passage of this precedent-setting bill.

1. INTERNATIONAL IMPACTS OF THE U.S. PESTICIDE EXPORT POLICY

First of all, let me provide some background on how the Circle of Poison affects our friends overseas.

In 1989 and 1990, respectively, Greenpeace released two reports outlining the domestic and international implications of the U.S. pesticide export policy. The reports are entitled: "Exporting Banned Pesticides: Fueling the Circle of Poison - A Case Study of Velsicol Chemical Corporation's Export of Chlordane and Heptachlor," and "Never-Registered Pesticides: Rejected Toxics Join the Circle of Poison - Four Case Studies of Pesticides Manufactured by: DowElanco, Mobay Corporation and Monsanto Agricultural Company."

1A. In the "Exporting Banned Pesticides" report, we demonstrated that the decisions made in Velsicol's corporate boardroom in Rosemont, IL and carried out from its manufacturing facility in Memphis, TN adversely affect humans and wildlife around the globe. Out of concern that the products can cause cancer, persist and bioaccumulate, the Environmental Protection Agency banned most all agricultural uses of chlordane and heptachlor in 1978, halting all but one minor use of heptachlor (for underground cable treatment) by 1989. Nonetheless, the company continues to produce these chemicals, primarily for export only.

Once overseas, they are used for termite treatment, in agriculture or for wood preserving. Residues of heptachlor have made their way into the most sacrosanct food - mother's milk. In Perth, Western Australia, the levels in breast milk were 15 times the international standard. That level was as much as 150 times the international standard for samples taken from women in Iraq whose homes were treated for termites.

The chemicals also have become all-pervasive in the global environment. They have made their way from the Antarctic atmosphere and fauna to the seawater, zooplankton, squid, Dahl porpoises and thick-billed murre of the North Pacific. They have also been found in the fat of polar bears in the Arctic which ate ringed and bearded seals contaminated with the chemicals. In other words, they have made their way up the entire food chain.

Then they come back to our dinner tables in the form of residues on imported foods. Using FDA data, we were able to document chlordane and/or heptachlor residues on a variety of foods, from beans, to carrots, pineapples, cheese and beef. [Recent research shows that from 1990 to early 1991, chlordane and heptachlor came into U.S. ports on rice, squash, mushrooms and fish.] These residues are the direct results of our "shoot ourselves in the foot" export policy which allows the export of pesticides for use in ways that will result in residues returning on imported foods.

1B. In the "Never-Registered Pesticides" report, Greenpeace documented the problems with the production, export and consumption of pesticides which are made, yet have never been registered, in the United States. These include Monsanto's herbicide butachlor (Machete), DowElanco's herbicide haloxypop (Gallant) and fungicide nuarimol (Gauntlet) and Mobay's

insecticide prothiophos (Tokuthion).

The pesticide industry claims that their "for-export-only" pesticides do not pose health and safety concerns. Given the inability of these pesticides to gain U.S. registration or tolerances over a multiple-year period, and knowledge of their toxicity from public data, we disagree. In fact, information we have demonstrate the chemicals can cause cancer, birth defects, neurological disorders and environmental harm.

Indeed, we consider these rejected pesticides to be just as dangerous as banned pesticides. Thus, never-registered pesticides exported from the United States pose a direct threat to farmworkers overseas and consumers in both countries.

The problem is compounded in that these products are exported to countries such as Costa Rica which don't even include chronic toxicity warnings on the labels of pesticide containers, and have inadequate training and use control schemes.

Once overseas, the pesticides are also used on major crops exported to the United States. These include apples, pears, pineapples, grapevines (wine) and barley (hops) as well as on pastureland (beef).

Do they come back in on imported foods? The Food and Drug Administration has tested for only one of the four pesticides (prothiophos) and has found it on imported mustard greens from Thailand and pickles from Sri Lanka. The other three never-registered pesticides go untested. We consider any findings to indicate the tip of a much bigger iceberg.

The Department of Agriculture doesn't even test imported meats and poultry for pesticides unregistered in this country, even if the U.S. is exporting them and government and industry both know that the products have a high probability of making their way into meat products.

1C. Most recently, we have documented that in the first four months of this year alone, U.S. manufacturers exported more than 3 million pounds (3,125,996) of just five pesticides which are essentially banned from use in the United States (heptachlor can be used on underground cables). This amounted to 26,050 pounds per day of these pesticides.

The precise figures are:

2,251,440 lbs. of Monsanto's butachlor (Machete) or 18,762 lbs./day
 370,406 lbs. of FMC's carbosulfan (Posse) or 3,087 lbs./day
 324,750 lbs. of Velsicol's heptachlor or 2,706 lbs./day
 148,512 lbs. of Velsicol's chlordane or 1,237 lbs./day
 30,888 lbs. of DowElanco's nuarimol (Gauntlet) or 257 lbs./day
 Every pound of banned and other hazardous pesticides exported

from the United States can result in more contamination of the environment, more poisoned workers and more tainted produce coming back in.

2. ASIA TRIP FINDINGS: LACK OF INFORMATION AND WIDESPREAD PESTICIDE MISUSE

At this point, I would like to describe the findings of my trip to Australia, Thailand, the Philippines and Malaysia from December 1990 to January 1991. My findings confirmed why it is so important to prohibit the export of those pesticides too toxic for use here and increase information exchange for others.

The purpose of my trip was to investigate the sale and use conditions of U.S. pesticides, as well as the export notification program required under Section 17 of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

On my trip, I met with officials from regulatory agencies (usually the Department of Agriculture) as well as union officials, workers growing rice, bananas and pineapples and pesticide activists. Their basic statement from all persons interviewed was a uniform - "We don't want to use pesticides banned in your country. We do want increased information on the toxicity of those pesticides which are registered, as well as information on non-chemicals alternatives."

Let me provide you with an overview of what I learned about the efficacy of our notification program, the availability of banned and never-registered U.S. pesticides, sales and use patterns of these pesticides and lack of access to health and safety information.

A. Notification

The United States is the only country in the world which requires notification of importing countries when a U.S. exporter intends to ship an unregistered pesticide. While the program sounds good in theory since it provides important information to regulators, in practice it appears to be ineffective and notices rarely, if ever, arrive. If they do arrive, the official need take no proactive role to make sure the notice is acknowledged since there is no consent requirement, so the information often goes unheeded.

I spoke with officials from the Departments of Agriculture in the Philippines, Thailand and Malaysia as well as the Department of Primary Industries (in Australia), all of whom are to receive the notification notices. I quickly learned that the notices were few and far between.

For example, although haloxyfop is used widely in Australia, the designated national authority who is to receive the notice did

"not recall seeing" any shipment notices "for quite some time." Similarly, the officials in Thailand could not find any notices of pending shipments since 1987 in their files in which all U.S. notices were kept.

Confusion reigns also at U.S. embassies over what is to be done with the notices and whether the information in them is confidential.

The U.S. Embassy in Thailand didn't know the person who had forwarded on to the Department of Agriculture export notices which had been sent in 1988, or who currently was responsible for such action. A subsequent follow-up letter from myself to determine the embassy's official protocol ultimately was met with a vague response that "the information may be entitled to treatment as trade secrets or proprietary data under U.S. law and, therefore, it would not be appropriate for the Embassy to release it." No effort was made to release any non-confidential information.

The U.S. Embassy in Malaysia was more aware of the protocol, yet the situation was grim. Officials there mostly only had notices of U.S. regulatory actions taken (and then only a few), and only in 1987 and 1989, had notices of the pending import of U.S.-unregistered pesticides. In pulling the files for 1988, they found there were no notices from EPA at all! No notices appeared to be in the 1990 and 1991 files. Not only was the information spotty - it had even been sent to the wrong official in the government! It had been the practice to forward any notices to the Department of the Environment, rather than the Department of Agriculture's Pesticides Board, which is the agency specifically involved in pesticide control. The Embassy now intends to notify both agencies.

In an effort to try to determine whether these notification letters were going out, Greenpeace has been trying to get copies of the letters. This effort, following on the heels of Congressional pressure over the last two years, helped spur a recent (April, 1991) EPA class determination permitting the public access to the destination information noted on these notification letters. Import/export information has long been public knowledge in many other countries, yet has been considered confidential in this country.

While we commend EPA for taking the first step toward lifting the veil of destination secrecy, we deplore the fact that gaining this information will still not be easy. EPA must first provide notice to the exporters that an organization like Greenpeace Action would like copies of the notice and tell the exporters they have the right to enjoin the Agency from releasing this information.

B. Sales

There appear to be no controls over the sales of pesticides over the counter in any of the countries I visited. In fact, in Thailand, storeowners on two separate occasions gave me packets of heptachlor on which the directions stated "to protect vegetable seeds from insect damage. Spray onto the ground where the insects are." They were amused at being able to give to an American packets of products exported from her own country yet banned for agriculture in both.

Monsanto was distributing free small bottles of an herbicide with no name of the active ingredient even listed.

C. Use Practices

To document the kind of widespread practices I witnessed in Asia, I have enclosed two photos. As the age-old saying goes - a picture tells a thousand words. These photos document the widespread manner of use of pesticides in Southeast and show that pesticides are not used safely in field conditions. Indeed, because of the heat and resultant non-use of protective clothing, they often cannot be.

The first photo is of a boy in the Philippines spraying the never-registered Monsanto herbicide butachlor (Machete) from a backpack sprayer on a rice paddy. Although the label on the container states "Avoid skin contact..." the boy walks directly into the spray mist for several hours at a time with bare legs, feet and hands as he applies the product.

The second shows two men spraying pesticides in a rice field Thailand. They pass by one another, and even approach the mixer/loader, while spraying the cloud of pesticide. The clothes they wear are absorbent cotton, worn only to protect them from the beating sun.

[Greenpeace also has filmed the use in Ecuador's banana plantations of pesticides like Dupont's fungicide benomyl. In one scene, a worker mixes the powder into a tank filled with a liquid mixture. Then, with wet powder benomyl all over his hands he goes to hook up the tank to the cropduster with a leaking hose. This hose sprays the benomyl mixture all over his arms and the tarmac when he disconnects it when the filling is complete. The plane then sprays the pesticide over the for-export bananas, directly over homes, trucks laden with produce, children and other workers.]

D. Information Exchange

Overseas, the general public is hampered by a lack of access to basic health and safety data upon which to make use or risk determinations.





TOTAL ENVIRONMENT CENTRE INC.

18 ARGYLE STREET, SYDNEY N.S.W. 2000
 Phones (02) 247 4714 — 241 2523 Fax (02) 247 7118



4th June, 1991.

Senator Leahy

Chair

Senate Committee on Agriculture, Nutrition and Forestry

U.S. Senate

WASHINGTON USA

Dear Senator Leahy

Re: The Circle of Poison Act, 1991

Our organisation urges the United States Government to ensure the rapid introduction of this law. American pesticide corporations have for too long used Australia as a major dumping ground for pesticides no longer permitted in your country. Over a ten year period we have campaigned to stop the use of pesticides like chlordane and heptachlor but our success has been limited to forcing government to restrict their use in termite control only. Remember it was only four years ago that Australian governments permitted their use in peoples' yards and ordinary consumers could buy chlordane over the counter.

Our concerns about pesticide dumping are long. They cover environmental pollution, health risks to workers and the unborn child as well as general risks to Australian people. Please take note of the information cited below:

1. The Circle of Poison is fed by disinformation and in Australia this has been perpetrated by a small group of pesticide importers and users who are in a position to mislead the public and the government on the nature of pesticide risk. We identify the chlordane/heptachlor defence lobby as based around the Environmental Heat Managers Association, a relatively newly formed team that arose from the ashes of the now disgraced Council of Australian Pest Control Association (CAPCA). HMA shares its head office at Turramurra in Sydney with Velsicol Australia Ltd, the company that imports chlordane and heptachlor from its parent company in the USA. EPMA executive and consultants include personnel from Velsicol and the Flick Company, based in Chatswood, who are major users of organochlorine pesticides.
2. The dumping of pesticides into our country has resulted in widespread pollution. In New south Wales for example fish have been analysed for organochlorine residues. 1988 studies measured large amounts of the termiticides in fish caught at all three Sydney outfalls. The most disturbing aspect of the investigation was that the very high chlordane levels were found in fish all along the Sydney coast. Levels of 34 times the 'safe' levels were found in fish north and south and up to 3.5 kilometres from the Malabar outlet. No further tests were done at further distances. Levels of 20 to 25 times the 'safe' level were found within 1.4 kilometres north of Manly and 1.5 kilometres south. The highest levels of heptachlor epoxide was found in fish taken near the Malabar outfall with levels 98 times the recommended levels. These levels are the ~~MRL's~~ and relate to

- 2 -

'safety' for human consumption. They do not take into account the impact that the contamination may have on the viability of the fish to survive or reproduce.

3. We have deep concerns about the misinformation presented to our government by pesticide companies regarding their assessment and regulatory status in your country. Federal, state and local government seem to believe that the United States EPA has overplayed the health effects of chlordane and heptachlor and claim that the cancer risk is overdone. Governments also fail to acknowledge substantial risks of chronic exposure to both the unborn and the living following repeated termite treatments with chlordane or heptachlor. They claim that the US levels for indoor air are interim guideline levels. However it is our understanding that these are evacuation levels and that zero residues will be required indoor should the cyclodienes be reintroduced onto the American market. We regard this possibility as extremely unlikely but are sure that manufacturers/importers Velsicol Australia are, publicly at least, confident in their capacity to satisfy the American EPA and this has been taken as verbatia by our government. However although levels of chlordane and heptachlor inside Australian homes are very high, there is no standard yet determined for levels in indoor air.

We believe that our government has been denied information about the risks of chlordane and heptachlor and that a significant hazard to our community and environment exists. Children, the unborn, pregnant women and pest control operators are particularly at risk and we have documented many cases of exposure and adverse health outcome.

We are also concerned that the dumping of other 'circle of poison' pesticides like haloxyfop methyl and prothiofos which are both used here and commonly sprayed from planes very close to human populations and their water supplies. In the Coffs Harbour region, prothiofos is used on bananas and in the cotton growing regions haloxyfop is also used. In both these areas, there are massive problems with pesticide pollution which is manifest in cancer, (with growing child cancer incidence) birth defects, chemical sensitisation, asthma, and many other health problems.

The pesticide industry continues to deny any association between pesticide use and ill health. When challenged on their regulatory status in the USA they try very hard to side-step the issue and as well to suggest that their registration is imminent in your country. We urge you, through PIC provisions to ensure that our government has full advice as to the gravity of the health risks posed by the continued use of chlordane and heptachlor and other poisons dumped in our country.

I am happy to provide some advice on this, should it be required. As I am to visit Washington in November, I would appreciate the opportunity to brief you again.

Please don't abandon your pioneering legislation to prevent the dumping of pesticides on other nations.

Yours sincerely,

(Dr) Kate Short
Total Environment Centre,

per *M. Wood*

The Pesticides Trust

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E-Mail on GreenNet:pesttrust

Senator Patrick Leahy

Chair

Committee on Agriculture, Nutrition, and Forestry

U.S. Senate

Washington DC 20510

U.S.A.

5 June 1991

Dear Senator Leahy -

Circle of Poison Prevention Act 1991

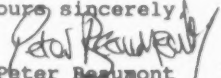
The Pesticides Trust is a U.K. charity concerned with the health and environmental effects of pesticides, and we write in support of the above Bill.

The Pesticides Trust has been working, together with other groups of the world-wide Pesticides Action Network, to reduce the use of hazardous pesticides, particularly in developing countries. We have been active in promoting the principle of Prior Informed Consent within the U.N. Environment Programme, and the U.N. Food and Agriculture Organisation. UNEP has recently recommended at its Governing Council that Governments adopt Prior Informed Consent into national legislations.

A number of hazardous pesticides, many of which are manufactured in the U.S. find their way to developing countries. We are pleased therefore to support your Bill, and in particular, the provisions relating to the prohibition of the export of pesticides that are not registered for food use, or which are severely restricted; Prior Informed Consent; regulatory notification; the development of sustainable agriculture, including integrated pest management and non-chemical alternatives to pesticides; and information on pesticides usage on imported foods.

We hope by this means progress will be made in reducing the danger to health and the environment world-wide from hazardous pesticides.

Yours sincerely,


Peter Beaumont
Coordinator

Company with charitable status limited by guarantee.

Regd. Office 258 Pentonville Road London N1. Regd. No. 2036915. Charity No. 327215



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Senator Leahy
U.S. Senate
Committee on Agriculture, Nutrition and Forestry
Washington, DC 20510

Nairobi 17th June

Dear Senator Leahy,

We would like to commend you for your introduction of the "Circle of Pesticide Prevention Act of 1991". This bill will go far towards helping control the export of pesticides to developing countries especially those in Africa.

Our current research on pesticide use in Kenya is proving that pesticides is a problem of tremendous proportions. According to the representative of the pesticide industry in Kenya, Mr. Clive Mutiso, "the pesticide situation in Kenya is very bad", and is continuing to deteriorate. Pesticide use in Kenya has not only proved to be very hazardous to human health and the environment, but is becoming a heavy economic burden to the Kenyan farmer. It is slowly undermining small-scale agriculture which is the main means of subsistence for the majority of Kenyans. The pesticide 'drug' is pushing the Kenyan farmer to the edge as a result of its ecological unsustainability and poor economic viability. The Kenyan farmer is in a desperate state. In the words of one farmer, who has done away with pesticides and resurrected the organic practices of his heritage, pesticides are an unnecessary evil.

We are very concerned about the pesticides which are being sold in Kenya, not only due to the mammoth figure of over 15,000 pesticide products being sold in the country (most of which have not been monitored or tested in Kenya), but also due to the fact that a large number of these pesticides fall in the WHO classification of Ia and Ib. This is not to say that pesticides in class II or III pose less of a hazard, as most of these pesticides are organochlorines and their toxicity becomes as dangerous in the

long-term. Needless to add, that no serious studies to our knowledge have been carried out to monitor the residual impact of these substances. Furthermore, the misuse of pesticides is a real problem due to the lack of proper training, dangerous repackaging, farmers not having the money to buy the protective clothing, and simply because there is very little being done to explain to the farmers that these pesticides are toxic. Moreover, the price of pesticides is increasing at a very rapid rate, leaving those who are hooked on pesticides in a desperate economic state accompanied with stress, anxiety, and frustration.

It is difficult to pin point out which U.S. pesticides are causing a problem in Kenya due to the camouflage techniques being employed by the manufacturers. Out of the seven major pesticide selling companies (controlling 80% of the market) six are European and only one is American. These are ICI, Rhone-Poulenc, Bayer, Ciba-Geigy, Shell, and Hechst. Only Monsanto is American. However, there are two problems which must be highlighted. First, many of these European firms are selling products for American companies (e.g. Bayer distributing an insecticide/miticide called Brigade which is manufactured by FMC, U.S.A.). Allow me to provide another example, Rhone-Poulenc is manufacturing a fungicide called Dithane M-45 which is a trademark of an American firm called Rohm & Haas. The distributor of the pesticide is called "Murphy", another local name for Rhone-Poulenc. This brings us to the second problem. With the exception of copper and some of its derivatives there are no pesticides being manufactured in Kenya. The active ingredients are all otherwise imported. Formulation is practiced in the country. The trade name game being played by the companies confuses us and the consumers. The distributor masks the identity of the manufacture, and all the firms have a local name (which change with time) making it all the more difficult to identify who the real manufacturer is. For example, Monsanto is selling its products through its distributor which is known locally as "Twiga". Round-up is being sold in the country by Monsanto (active ingredient: glyphosate) and also has sold the trade mark to Rhone-Poulenc which is selling it as "Kamata". This policy of 'name camouflage' is a marketing policy which deceives farmers by making them believe that a new and effective product has been introduced to the market. The farmers rush to buy the "new product". The rush is accelerated by the intensive campaigning of the companies sales persons that a new a product has come to town.

Some of the U.S. pesticides imported and widely used in Kenya include alachlor, metolachlor, atrazine, aldicarb, and carbofuran. We are particularly concerned about carbofuran as it is widely used on crops in Kenya, and yet has not been able to gain a registration of food residue tolerance in the United States.

As I mentioned earlier we are in the process of screening the pesticides being sold in Kenya. The list therefore is by no means comprehensive, but we would be glad to send you a more complete list in the very near future.

Trade name: Avadex

Active ingredient: Diallate/di-allate

Manufacturer: Monsanto

Use: Herbicide for wheat and barley

Remarks: Monsanto is lying and writing on the label that the active ingredient is Diallate which is a WHO Class III. While Diallate is class II. Green Peace FRG

reported that registration has been terminated for diallate in FRG the reason being "toxicological objection (melanoma inducing effects in animal tests (hamster) during carcinogenity studies. Discontinued by Monsanto".
Product sold in Kenya/year of manufacture 06/01/1988 (no batch number).

Trade name: Laseo plus atrazine
Active Ingredient: 350g/litre alachlor
plus 200g/litre atrazine
Manufacturer: Monsanto
Use: residual herbicide — weeds with maize/sugar cane

Trade name: Round-up (also sold as Kameta)
Active Ingredient: glyphosate
Manufacturer: Monsanto
Use: contact herbicide, coffee, tea, all kinds of vegetables

Trade name: Ortho-Difolaton/ Bayleton/ Moduna/ Kenotol/ Helmatol Merpatol/ Difolaton
600 flow (many other names)
Active Ingredient: Captafol
Manufacturer: Bayer/and others
Use: heavily in Coffee and vegetables
Remark: many cases of farmer poisoning and complaints

Trade name: Brigade
Active Ingredient: Biphenthrin 25g/litre
Manufacturer: FMC Corporation
Use: Citrus, Vegetables, Ornamental, Soil Pests

Trade name: Goal 2E Herbicide
Active Ingredient: 23.6% Oxyfluorfen (5 litre)
Manufacturer: Rohm & Haas Co.,
Use: weeds in Coffee

Trade name: Marshal 250 EC
Active Ingredient: 25% w/v Carbosulfan (1 litre)
Manufacturer: FMC Corporation
Use: on Citrus, Vegetables, Tomatoes, Cotton, Beans, Ornamental, Mangoes

Trade name: Asuntol 50
Active Ingredient: Coumaphos 50% w/w/ as a wettable powder (1.4 Kg)
Manufacturer: Bayer
Use: tick control
Remark: On the label written "kills ticks safely and effectively", classified by WHO as Class Ia.

Trade name: Dieldrin/Dieldrex 18
 Active Ingredient: Dieldrin
 Manufacturer: May & Baker/Shell
 Use: Coffee, Bananas, Steel Weevil, Vegetables, Termites

Trade name: Dawa ya Mboga (many other names)
 Active ingredient: Lindane
 Manufacturer: Rhone-Poulenc
 Use: Peas/beans

Trade name: Gramaxone
 Active Ingredient: Permethrin 200g per litre
 Manufacturer: ICI
 Use: Tea, Coffee, Bananas, Sugar Cane, Pyrethrum
 Remark: many poisoning complaints from farmers

Trade name: Furadan 5g
 Active Ingredient: Carbofuran 5% 200g
 Manufacturer: Hoechst
 Use: Vegetable, Beans, Maize, Potatoes, Bananas, Coffee, Citrus

Trade name: Dursban 4
 Active Ingredient: Chlorpyrifos 480/lit
 Manufacturer: Rhone-Poulenc
 Use: Fruit trees, Vegetables, Steel Weevil, Pineapple Mealy Bug

Trade name: Aftalon
 Active Ingredient: Unuron 47.5% w/w 200g
 Manufacturer: Hoechst
 Use: Carrots, Onions, Beans, Peas, Potatoes

Trade name: Cybolt 100E
 Active Ingredient: fluoethrinat 100g per litre
 Manufacturer: Rhone-Poulenc
 Use: Cotton, Vegetables, Cereals, Coffee, Fruits, Ornamental, Maize, Rape, Vines

Trade Name: Impact
 Active Ingredient: Flutriafol 125g per litre
 Manufacturer: ICI
 Use: Wheat, Barley

Trade Name: Temik 150G
 Active Ingredient: Aldicarb
 Manufacturer: Rhone-Poulenc
 Use: Coffee, Ornamental

Trade Name: Mocap

Active Ingredients: Ethoprophos

Manufacturer: Rhone-Poulenc

Use: Bananas, Beans, Ornamental, Papayas, Pineapples, Potatoes, Rice, Sugar Cane, Tobacco, Tomatoes, Vegetables

Trade Name: Primagram

Active Ingredient: Atrazine and Metolachlor

Manufacturer: Ciba-Geigy

Use: Wheat

Trade Name: Mistral

Active Ingredient: Fenpropimorph

Manufacturer: May and Baker

Use: Wheat, Barley, Oats, Cereals

Trade Name: Ultraide

Active Ingredient: Methidathion 400g per litre

Manufacturer: Ciba-Geigy

Trade Name: Delan

Active Ingredient: Dithianon

Manufacturer: Hoechst

Use: control of Coffee Berry Disease (CBD) in Coffee

Trade Name: Novadrin/Aldrex

Active Ingredient: Aldrin 480g per litre

Manufacturer: Shell / Nova Chemical Ltd.

Use: Soil pests

Trade Name: Neocidol

Active Ingredient: Diazinon

Manufacturer: Ciba-Geigy

Use: Tick control in cows, bed bugs, etc

Trade Name: Malathion 50% EC/Poultry Louse Powder/Grain Storage Dust

Active Ingredient: Malathion

Manufacturer: Rhone-Poulenc/Pharma & Horticultural Inputs Ltd/ Nova Chemicals Ltd

Use: Maize, Millet, Beans, Sorghum, Peas, Apples, Pears, Avocados, Citrus, Coffee, Mangoes, Papaya, Tomatoes, Vegetables

Remark: Rhone-Poulenc which is selling Malathion 50% EC has written that the active ingredient is Mercaptothion! We know nothing about this chemical. Maybe you can help us? But personally I think they are only trying to create more confusion about the true identities of their products. Many cases of poisoning of farmers.

Trade Name: Nemacur

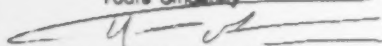
Active Ingredient: Fenamiphos and Isfenphos

Manufacturer: Bayer

Use: Vegetables, Potatoes, Sugar Beet, Citrus, Peach, Guava, Litchi, Pecan, Pineapple, Grapes, Bananas

As you can see this list is by no means representative of the pesticides being sold in Kenya, and it does not do justice to the hazardous pesticides used in the country. We believe that all pesticides pose a problem in Kenya. Let me tell you that every farmer that my colleague Hassan Partow has talked to has reported that at one time or another he has experienced pesticide poisoning. According to a study conducted in 1988 by A.W. Choudhry of the Kenya Medical Research Centre (KEMRI) and B.S. Levy of the Environmental & Occupational Health Research Programme, University of Massachusetts, entitled Morbidity Estimates Of Occupational Illness In Kenya: Human and Economic Costs an estimated 350,000 cases of pesticide poisoning occur among agricultural workers in Kenya alone each year. Another report has documented 1,000 deaths due to pesticide poisoning annually. We believe that this figure is way too low and that the actual figure of pesticide poisonings is in the millions. All information on pesticides is regarded by the Government of Kenya as "confidential" and hence it is extremely difficult to analyze the true proportions of the pesticide problem in the country. We plead with you Mr. Senator to take swift and effective action to curb the dumping of pesticides in developing countries which have not been registered, banned, and restricted in the United States. The Kenyan farmer has no one to defend him at the conferences or in the decisions of the giants, but we believe you can change this.

Yours Sincerely



Jane-Marie Pyeml

Sustainable Agriculture Coordinator

PAN ASIA PACIFIC

PESTICIDE ACTION NETWORK

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Penang, Malaysia.
Tel: (60-4) 371396.
Fax: (604) 366506.
Cable: INTEROCU Penang.
Tlx: MA40164AIOCU

Senator Patrick Leahy
Chair
Committee on Agriculture
Nutrition and Forestry
U.S. Senate
Washington, DC 20510
U.S.A.

14 June 1991

Dear Senator Leahy

Last week a workshop on "Women and Pesticides" was organized by Tenaganita, a Malaysian women's organization in collaboration with PAN Asia Pacific. At the workshop we heard from citizens groups working in the plantation sector about the health problems caused by pesticides that women sprayers have experienced.

These women spray pesticides such as monocrotophos, 2,4,-D, methamidophos, paraquat, glyphosate without the minimum protective clothings. They work under very harsh and hazardous conditions without proper health care and medical monitoring. Protective clothing is rarely used and even if it is the hot, humid climate makes it impractical. Organising for better, safe working conditions are difficult. Furthermore, legislation to protect pesticide workers in plantations has yet to be implemented.

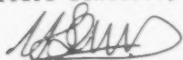
All the problems mentioned in the letter from the International Organization of Consumers Unions dated 27 March 1990 (a copy attached) addressed to you are still evident. In Asia, pesticide containers are still reused for storing water and food. Leaking and poorly labelled pesticide bottles are still being sold.

As stated in that letter, pesticides such as aldicarb, carbofuran, glyphosate and EBDC marketed by US companies are being used in Asia under hazardous conditions.

We would thus like to urge that the proposed US controls on pesticides exports are adopted and implemented. It would be an example for other countries and help prevent some of the problems caused by pesticides exported by US companies.

Thank you

Yours sincerely



Sarojini Rengam (Ms)
Coordinator

PAN Asia-Pacific

PAN is a global coalition of citizens groups and individuals who oppose the unnecessary use and misuse of pesticides and support reliance on safe, sustainable pest control methods. Established in 1982, PAN currently links over 300 groups in some 50 countries coordinated by six regional centres. They are in Dakar, London, Nairobi, Palmyra, Penang and San Francisco. PAN Regional Centre for Asia and the Pacific is hosted by the International Organization of Consumers Unions (IOCU) Regional Office for Asia and the Pacific.



Fundación Natura

FUNDACION ECUATORIANA PARA LA CONSERVACION DE LA NATURALEZA

No. 1009-9.
Quito, July 4, 1991

Mr. Senator Leany
Agriculture Committee
U.S.A

Dear Senator:

Fundacion Natura is a private, non profit organization dedicated to the protection of the environment and to promote the rational use of Ecuador's natural resources. Among the projects that our organization carries out is Environmental Education about Pesticides.

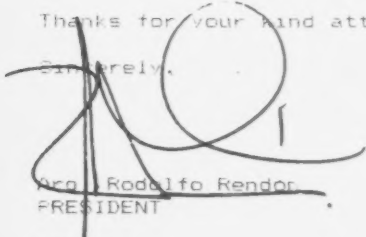
We are very concerned about the import and use of pesticides in Ecuador, that we import, specially, from the United States. In the past, we imported as well others pesticides as chlordane and neptachlor, but we forced to cancel their registration since they caused serious problems of contamination in our food, soils and even in the human milk.

Our regulatory structure is underfunded and short-staffed. As such, the government is not able to adequately control their use and the risk on the human health and the environment. Therefore, the only way is stopping the introduction of this dangerous compounds with the help of all the countries of the world to work towards increased controls on pesticide exports.

We want to support this campaign to prevent further exportation of these pesticides and others toxic agrochemicals to the Third World countries like Ecuador.

Thanks for your kind attention and best wishes.

Sincerely,


Arg. Rodolfo Rendon
PRESIDENT

RER/mcm

Pesticide firms flout safety code

PESTICIDES continue to poison and kill

Omar Sattaur, Bangkok

people who use them in the Third World because the companies that sell them fail to observe a voluntary code of conduct for the distribution and use of pesticides. The code was passed 16 months ago by the UN's Food and Agriculture Organisation (FAO). Companies and governments in the Western world agreed to abide by the code at a UN general assembly in late 1985.

Research by two investigators from the New York Institute for Consumer Policy Research and the International Organization of Consumers' Union in Penang, Malaysia, shows that they have failed to do so.

Michael Hansen, an American ecologist, and Jini Rengam, of the Malaysian union, studied the sale and use of pesticides in three Third world countries—Indonesia, the Philippines and Thailand. They list a litany of violations of the FAO's code of conduct, which seeks to limit the dangers of pesticides by outlawing the publication of inadequate, inappropriate or misleading information on the use of pesticides sold in the Third World. The code is "just not working", says Hansen.

Peasant farmers in Indonesia can buy Aldicarb—an extremely potent pesticide—in small plastic bags that carry no warning or instruction labels of any kind. The FAO's code specifically asks for better labelling. Bangkok homeowners can rid their homes of termites with a powder that is 80 per cent arsenous trioxide, a pesticide banned ten years ago by the Thai government. It is potent enough to kill a human at a dose of just 2 milligrams per kilogramme of body weight.

The West German chemical company, Bayer, claims in the January issue of a Philippine farmers' magazine called *Greenfields* that it's "extensive research has the single objective of ensuring that its chemicals are safe and effective". Yet a blend containing ethyl azinphos (trade-named Gusathion), one of four of its products listed in an advertisement, can (in its pure form) kill a human at a dose of 12 milligrams per kilogram of body weight.

Exporters also neglect a provision of the code which obliges them to sell their pesticides in a range of pack sizes suitable not only for the largest users, but also for the smallest. This would preclude the need for farmers to handle and repackage them into unsuitable containers.

Hansen visited shops in Indonesia where open sacks of granular pesticides were strewn around the floor. In one shop, a fan blew the toxic dust into the air. In another, Hansen said: "there was so much pesticide dust around that my hands began to burn. When we asked if there was anywhere to wash, I was handed a rag already contaminated with pesticide."

The code urges manufacturers to ensure that their advertisements do not depict potentially dangerous use of pesticides. A 1987 calendar circulated in Indonesia by the US chemical giant, DuPont, listed eight pesticides made by the company beneath a colour photograph showing a product being sprayed by a woman wearing no gloves, mask or special protective clothing. Instead, she sported a necklace, nail polish, earrings, lipstick and mascara.

Repackaged pesticides sometimes bore labels that were illegible because they were smeared, torn or had print that was too small or blurred to read. Some labels lacked information relevant to safe use, storage, hazards and symptoms of poisoning.

Although the survey covered just 16 stores in three countries, Hansen and Rengam found six pesticides for sale in Indonesia that were severely restricted for use in the US, the country of origin. The authors of the report believe that there are likely to be other examples of banned or severely restricted pesticides being exported to developing countries by European



Adherence to the pesticide code is far from uniform

manufacturers.

The FAO's committee on agriculture meets this week to discuss issues arising from the meeting in 1985 when the code was agreed. Developing countries attending are likely to push for inclusion in the code of a provision called "prior informed consent" (PIC). Manufacturers who make pesticides that are banned or severely restricted in use in the country of origin would, if PIC was adopted, be obliged to notify importing countries of the reasons why this is so. Before importing the chemical, the importing country would have the liberty to give its consent, having received the information. PIC was an integral part of the seventh draft of the original code. By the ninth and final draft, PIC had been dropped, despite the fact that more than 20 delegates from different countries had endorsed the concept. They expressed dismay over its omission from the final draft. □

THIS WEEK

OVERVIEW OF "CIRCLE OF POISON PREVENTION ACT OF 1991"

Circle of Poison: A loophole in current law allows U.S. chemical companies to export pesticides EPA considers cancer causing and too dangerous for domestic farm use. Used on foreign-grown food that is shipped here and scarcely inspected at the U.S. border, these pesticides often end up on America's dinner tables, completing a cycle many call the "Circle of Poison."

A provision to break the Circle of Poison was dropped from last year's farm bill, after the Administration, using arguments supplied by the pesticide industry, directed an unrivaled attack on it.

This year's legislation, called the "Circle of Poison Prevention Act of 1991" (COPPA), bans the export of pesticides that cannot be used domestically (i.e., have no EPA "registration") or cannot be present on food consumed in U.S. (i.e., have no EPA "food tolerance").

On the contamination of imported food: Overall, five percent of the imported food FDA samples is found contaminated with illegal pesticides -- twice the rate for domestic foods. The actual violation rate may be substantially higher since FDA routinely does not screen for scores of unregistered pesticides that are used on imported food.

On imported food consumed: Pesticides exported abroad can come back to the U.S. on treated fruits and vegetables. Each year, Americans consume 134 billion pounds of fruits and vegetables, 25 percent of which is imported. That equals 135 pounds of imported fruits and vegetables for every man, woman and child. During the winter months, half of what we consume is imported.

FDA screens a minuscule amount of imported foods: Although FDA is responsible for inspecting almost all imported food, they sample a minuscule one to two percent of the food entering this country. The rest is simply waived through at the wharf. In the last three years, federal inspectors have found U.S.-banned pesticides in beef from Honduras, pineapples from Mexico, rice from Pakistan, mushrooms from France and beans and carrots from Latin America.

Level the playing field: If a U.S.-made chemical is banned here but used by competing producers in a foreign country, then we are effectively penalizing U.S. farmers and growers for using safe pesticides and obeying the law.

**KEY PROVISIONS OF
"CIRCLE OF POISON PREVENTION ACT OF 1991"**

- **Export Ban:** For the first time, bans the export of pesticides that cannot be used domestically (i.e., have no EPA "registration") or cannot be present on food consumed in U.S. (i.e., have no EPA "food tolerance").
- **Safer Food:** To make food safer, EPA must immediately revoke or suspend a pesticide food tolerance when it revokes or suspends its registration.
- **Level Playing Field for U.S. Farmers:** Blocks foreign farmers from receiving pesticides from the U.S. that domestic farmers cannot use.
- **Cannot Hide Pesticides:** To help find illegal chemicals used on imported foods, requires for the first time that pesticides be detectable by FDA's regular screening tests.
- **Prior Informed Consent:** For the first time, allows other countries to refuse any "restricted-use" (hazardous) pesticide. Countries will receive specific information about the safety of pesticides before accepting them.
- **Worldwide Notification:** For the first time, requires worldwide notification of significant pesticide regulatory decisions including new registrations, conditional registrations, cancellations and withdrawals, suspensions, "restricted use" classifications, and special reviews.
- **Eliminates Loophole:** Requires that "me toos" -- pesticides claimed, often falsely, to be significantly similar in composition -- no longer be exempt from proper regulation.
- **Better Labeling and Packaging:** Requires pesticide labels to be written in an official language of the country where the pesticide will be used. Also requires that packaging meet the legal requirements of the country of use.
- **Leadership Role for U.S.:** Directs EPA to: 1) convene international meetings to develop multinational pesticide export control measures; and 2) assist foreign countries in developing better pesticide regulatory and sustainable agriculture programs.
- **Citizens Suits:** In addition to EPA-initiated enforcement actions, allows direct citizen enforcement of bill's provisions.

LEGISLATIVE HISTORY OF CIRCLE OF POISON

1990 Farm Bill: During the Senate Agriculture Committee markup, Sen. Patrick Leahy (D-VT) put Circle of Poison reform legislation into the Senate farm bill. It banned the overseas export of U.S.-made pesticides that the EPA considers possible carcinogens and too dangerous for domestic farm use.

In the House, a bill similar to that put into the Senate farm bill was introduced by Rep. Mike Synar (D-OK), Leon Panetta (D-CA) and Dan Glickman (D-KS). The House bill was amended and later included in the House farm bill.

At conference, the House and Senate conferees could not agree on a Circle of Poison provision that adequately dealt with the export of hazardous pesticides. The issue was dropped from the farm bill.

The Administration's role: Using arguments supplied by the pesticide industry, the Administration directed an extraordinary attack on Circle of Poison, playing the key role in killing it.

Five Administration agencies (EPA, USDA, Commerce, Justice and the U.S. Trade Representatives) argued that the legislation would "disrupt trade which may be worth several hundred million dollars per year, and which undoubtedly supports a large number of American jobs" and "could cause serious damage to the American agricultural chemical industry."

The Administration was criticized when it admitted it did not know how many banned and unregistered chemicals are exported each year from the U.S. The agencies are still unable to document this contention.

The nonpartisan Congressional Research Service of the Library of Congress criticized the industry arguments and survey as: "The bases of the [industry] survey's worst-case estimates of economic impacts appear to be possible, although not necessarily probable, outcomes."

Analysis by the Senate Agriculture Committee also refuted the chemical company survey. It concluded that, under a worse case scenario, theoretically 700 to 1,000 U.S. jobs would be impacted by the legislation -- less than one-tenth of one percent (0.04% to 0.06%) of the jobs in the U.S. chemical industry. It also concluded that this number will be substantially reduced as manufacturers shift to producing safer, registered chemicals and other products. To show how relatively small this number is, the Committee reported that approximately 41,000 U.S. chemical company workers call in sick at least one day a week.

PROBLEMS WITH IMPORTED FOOD/ IMPACT ON FOREIGN WORKERS

Food and Drug Administration data shows that imported food has substantially higher levels of contamination from illegal pesticides than domestic food. For example, 10.3 percent of imported peas have been found with illegal pesticide residues (pesticides that have no domestic tolerance or which are illegal to use in the U.S.), while no violations were found for domestically-grown peas.

	<u>Imported</u> ¹	<u>Domestic</u> ¹
peas	10.3%	0%
eggplant	9.4%	0%
cabbage	8.9%	0%
pears	8.3%	0%
peppers	7.4%	0%
squash	4.5%	1%
blackberries	8.9%	no data
tangerines	7.1%	no data

New requirements for import tolerance: Under current law, it is often legal to import food treated with a banned pesticide years after the pesticide has been barred from domestic use. For example, while DDT was banned from domestic use in 1972, it was still legal to import DDT-treated food for another 14 years. Similarly, chlordane was banned from domestic farm use in 1978, yet chlordane food could be imported until 1989 -- 11 years later.

This not only presents a health and safety problem for American consumers but is unfair to American farmers who must play under one set of pesticide rules while their foreign competitors use another. To sever the "circle," the legislation requires EPA to cancel or revoke a food tolerance (which allows the pesticide to be present on domestic or imported food) when the its registration (allowing domestic farm use) is canceled or revoked.

Impact on foreign workers: U.S. made chemicals often have tragic consequences in other countries when they are used by workers unaware of the risks involved. The use of one pesticide, DBCP, may have sterilized as many as 2,000 banana workers in Costa Rica. Despite a 1958 industry study showing that DBCP could cause sterility in laboratory animals, it was widely used in the 1960s and 1970s to kill insects on fruits, vegetables and nuts. It was finally banned by California in 1977 and EPA in 1979. Although Shell, Dow Chemical, and Amvac stopped making DBCP soon thereafter, it is a graphic illustration of the devastation caused by U.S. chemicals dumped overseas.

¹FDA data for compliance and surveillance samples. Imported: FY1988 through April 1990. Domestic: 1988

PARTIAL LIST OF BANNED AND UNREGISTERED CHEMICALS

These are a few of the made-in-the-U.S. pesticides that will no longer be exportable under the "Circle of Poison Prevention Act of 1991":

1. **Chlordane and Heptachlor, made by Velsicol Chemical:** Known carcinogens, Velsicol makes chlordane and heptachlor at its Memphis, Tennessee plant. Although both were banned from U.S. farm use in 1978, Velsicol still exports them overseas, sending nearly two million pounds to 14 countries since the beginning of 1990. FDA testing has found these chemicals on imported meat, fruits, and cheese.
2. **Haloxypop (Gallant), made by DowElanco:** After classifying haloxypop as a "probable human carcinogen," EPA refused to approve any of DowElanco's three applications for import tolerances for beef and other animal products or one for a registration. Gallant is used in Australia, Chile, Costa Rica, Indonesia, and France for use on chickpeas, apples, pears, palm trees (oil), and wine grapes.
3. **Nuarimol (Triminal), made by DowElanco:** EPA refused a food tolerance petition for nuarimol in 1983 due to concerns about the risk of cancer and birth defects. Nuarimol is used in Germany, United Kingdom, Italy, France, and Spain on barley and grape vines.
4. **Prothiophos (Tokuthion), made by Mobay:** EPA has refused Mobay's application for an import tolerance due to concerns about the risk of cancer and birth defects. Prothiophos is used in Indonesia, Japan, and Australia on palm trees (oil), pears, tea, and grape vines.
5. **Butachlor (Machete), made by Monsanto:** Due to concerns about cancer risk and ground water contamination, EPA has refused Monsanto's applications to register butachlor. Butachlor is used in Thailand, India and Japan on rice.
6. **Carbosulfan (Marshal, Sheriff and Posse), made by FMC:** Carbosulfan has neither a tolerance nor registration but is exported to Indonesia, Thailand, Ireland, Spain, United Kingdom and Yugoslavia for use on corn, rice, soybeans, beets, broccoli, potatoes and asparagus.
7. **Acetochlor, made by Monsanto:** EPA considers acetochlor a "probable human carcinogen." In 1983, Monsanto applied for both a registration and food tolerance for acetochlor, neither of which have been granted. It is used in Eastern Europe on corn, cauliflower, potatoes and apples.

IMPACT ON U.S. CHEMICAL COMPANY EMPLOYMENT PREPARED BY SENATE AGRICULTURE COMMITTEE

Conclusion: Under a worst case scenario, the Committee concludes that at most 700 to 1,000 U.S. jobs could be impacted by the legislation -- less than one-tenth of one percent (0.04% to 0.06%) of the jobs in the U.S. chemical industry. This number will be substantially reduced as manufacturers shift to producing safer, registered chemicals and other products.

To show how relatively small this number is, approximately 41,000 U.S. chemical company workers call in sick at least one day a week.¹

Committee calculations are as follows:

U.S. chemical company employees (worldwide):	1,659,800 ²	100.00%
U.S. agricultural chemical employees (domestic):	67,700 ²	3.00%
U.S. pesticide employees (domestic):	22,000 ²	1.00%
U.S. pesticide employees in export of pesticides:	6,000 ²	0.40%
U.S. pesticide employees in export of unregistered pesticides:	2,000 ³	0.10%
U.S. pesticide employees in export of unregistered pesticides -- excluding pesticides with a food tolerance and "me-too" pesticides:	700-1,000 ⁴	0.04% to 0.06%
PROJECTED WORST CASE JOB LOSS UNDER 700-1,000 "CIRCLE OF POISON PREVENTION ACT OF 1991"		0.04% to 0.06%

¹Congressional Research Service. Each week, 3.8% of chemical industry workers miss at least one day of work.

²Congressional Research Service.

³General Accounting Office, "Pesticides: Export of Unregistered Pesticides Is Not Adequately Monitored by EPA," (April 1989). In 1987, 31% of the 400-600 million pounds of U.S. manufactured pesticides exported were unregistered. For 1985-1987 the percentage was 25%.

⁴Environmental Protection Agency. Pesticides with a food tolerance are exportable under the "Circle of Poison Prevention Act."

**BASIC QUESTIONS AND ANSWERS ON
THE "CIRCLE OF POISON PREVENTION ACT OF 1991"**

What is the Circle of Poison? Some unregistered or banned pesticides that cannot be used for domestic farm use are still made in the U.S. and then exported for foreign agricultural use. When this treated foreign food is imported to the U.S., the pesticide has made a complete circle -- the Circle of Poison.

Do we still import food containing dangerous pesticides? FDA samples roughly one to two percent of all food shipments entering the U.S., and generally finds that five percent have residues of pesticides for which there is no food tolerance and are already illegal to import.

Instead of stopping exports, isn't the answer to the Circle of Poison better monitoring at the border? Doubling FDA's testing budget would allow it to sample only two to four percent of imported food, giving little assurance of protection. Also, many chemicals cannot be picked up through FDA testing.

How will this bill affect domestic farmers and domestic agriculture? The bill will level the playing field for American farmers and growers. If a chemical is banned here but used by competing producers in a foreign country, then we are in effect penalizing U.S. farmers and growers for using safe pesticides and obeying the law.

What about pesticides that are not registered in the U.S. because they are used on food not grown in the U.S? Under the "Circle of Poison Prevention Act," these pesticides can still be exported if there is a food tolerance (i.e., it is legal to have that pesticide's residue on food consumed in the U.S.).

U.S. chemical companies are responsible. If they cannot sell their products, foreign markets will be served by fly-by-night or pirate companies. Not all U.S. companies are responsible exporters. EPA recently fined eight for violating U.S. export laws: Exxon, Mobay, Shield Bright, Dow Chemical, Rohm and Haas, Sandoz, Monsanto and Chevron. The industry cannot police itself.

Poor, third-world countries need pesticides to avoid famine and to feed their people. Don't they need these chemicals? Because the U.S. has the most advanced agricultural technology in the world, we are developing safer alternatives to some of the older, more risky pesticides being taken off the market. These chemical alternatives, as well as integrated pest management practices, are being made available to third world countries. In cases where no alternatives exist to prevent the spread of communicable disease and famine, the legislation allows the export of unregistered pesticides.

This legislation will cost American jobs and research/development. We will just be exporting jobs and research and development overseas. If we don't do it, someone else will.

Research: This bill places no new restrictions on domestic research and development. It will not cause pesticide companies to abandon their billions of dollars invested in U.S. facilities and personnel.

Jobs: The U.S. chemical industry employs approximately 1 million people, 22,000 of which work on agricultural pesticides. An estimated 700 to 1,000 work on chemicals barred from export by this legislation. Thus, 1/10 of 1 percent of total chemical industry jobs would be affected by this legislation. Also, U.S. firms manufacture a range of pesticides at U.S. facilities. It is unlikely that they will build new plants just for the production of some relatively small product lines.

Won't this bill simply force American companies to produce the banned chemicals overseas, giving us less control over the problem? We have a moral responsibility on food safety. If the chemicals are not safe for American farmers and consumers, they are not safe for foreign farmers and consumers. Even if these pesticides are produced overseas, this legislation will prohibit importing into the U.S. any food that has been treated by unregistered pesticides. The importance of the U.S. market for foreign agricultural producers provides an important disincentive to the use of, and the demand for, these pesticides.

Will this be an infringement on free trade? Does the bill interfere with GATT? No. Countries may set safety standards, provided they require their own producers to meet the same standards. This bill requires necessary reporting on pesticide use to ensure they are meeting the same standards as American farmers.

Why should the U.S. take a unilateral role? The Drug Enforcement Administration has taken unilateral action to bar U.S. companies from exporting chemicals being diverted to process cocaine. The Administration argued that it was important for the U.S. to take a leadership position to stop the spread of drugs. The U.S. is also considering similar unilateral action against exports used to manufacture chemical weapons. With both bans, Administration officials say it is important for the U.S. to take a leadership role in restricting the export of those chemicals that are diverted to make cocaine or chemical weapons.

The Circle of Poison legislation proposes that the same leadership role for the U.S.

Is the Circle of Poison a problem for foreign workers? Untrained foreign workers use U.S. pesticides that may injure them. For example, DBCP may have sterilized as many as 2,000 banana workers in Costa Rica. Also, there are 25 million poisonings each year in developing country and the U.S. is one of the top three chemical producers in the world.

102D CONGRESS
1ST SESSION

S. 898

To amend the Federal Insecticide, Fungicide, and Rodenticide Act to improve the safety of exported pesticides, and for other purposes.

IN THE SENATE OF THE UNITED STATES

APRIL 23 (legislative day, APRIL 9), 1991

Mr. LEAHY (for himself, Mr. BURDICK, Mr. GORE, Mr. ADAMS, Mr. DURENBERGER, Mr. KENNEDY, Mr. AKAKA, Mr. BRYAN, Mr. CRANSTON, Mr. INOUE, Mr. JEFFORDS, Mr. KOHL, Mr. LEVIN, Mr. LIEBERMAN, Mr. MOYNIHAN, Mr. REID, and Mr. SARBANES) introduced the following bill; which was read twice and referred to the Committee on Agriculture, Nutrition, and Forestry

A BILL

To amend the Federal Insecticide, Fungicide, and Rodenticide Act to improve the safety of exported pesticides, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

4 (a) SHORT TITLE.—This Act may be cited as the
5 “Circle of Poison Prevention Act of 1991”.

6 (b) TABLE OF CONTENTS.—The table of contents of
7 this Act is as follows:

Sec. 1. Short title; table of contents.

TITLE I—EXPORTED PESTICIDES

- Sec. 101. Definitions.
- Sec. 102. Registration of establishments.
- Sec. 103. Protection of trade secrets and other information.
- Sec. 104. Unlawful acts.
- Sec. 105. Imports and exports.
- Sec. 106. Health and environmental effects reports.
- Sec. 107. Conforming amendments to table of contents.

TITLE II—PESTICIDE RESIDUE MONITORING

- Sec. 201. Data management.

TITLE III—PESTICIDE TOLERANCES

- Sec. 301. Revocation of tolerances and practical testing methods.

TITLE IV—PESTICIDE INFORMATION

- Sec. 401. Disclosure of pesticides in import documents.
- Sec. 402. Annual reports by agricultural attaches.

TITLE V—EFFECTIVE DATES

- Sec. 501. Effective dates.

1 TITLE I—EXPORTED PESTICIDES

2 SEC. 101. DEFINITIONS.

3 (a) IN GENERAL.—Section 2 of the Federal Insecti-
 4 cide, Fungicide, and Rodenticide Act (7 U.S.C. 136) is
 5 amended by adding at the end the following new subsec-
 6 tion:

7 “(hh) COUNTRY OF USE.—The term ‘country of use’
 8 means any foreign country in which—

9 “(1) a pesticide is used;

10 “(2) a pesticide is intended by the exporter to
 11 be used or formulated; or

3

1 “(3) on the basis of information reasonably
2 available to the exporter, the use or formulation of
3 a pesticide being exported is foreseeable.”.

4 (b) MISBRANDED.—Section 2(q)(1) of such Act (7
5 U.S.C. 136(q)(1) is amended—

6 (1) by striking “or” at the end of subparagraph
7 (G);

8 (2) by striking the period at the end of sub-
9 paragraph (H) and inserting “; or”; and

10 (3) by adding at the end the following new sub-
11 paragraph:

12 “(I) in the case of a pesticide intended for
13 export from the United States, the labeling does
14 not meet the requirements of section 17(a).”.

15 **SEC. 102. REGISTRATION OF ESTABLISHMENTS.**

16 Paragraph (1) of section 7(c) of the Federal Insecti-
17 cide, Fungicide, and Rodenticide Act (7 U.S.C. 136e(c))
18 is amended to read as follows:

19 “(1)(A) Any producer operating an establish-
20 ment registered under this section shall inform the
21 Administrator within 30 days after the establish-
22 ment is registered of the types and quantities of pes-
23 ticides and active ingredients used in producing pes-
24 ticides that the producer—

25 “(i) is currently producing;

1 “(ii) has produced during the past 365-day
2 period; and

3 “(iii) has sold or distributed during the
4 past 365-day period.

5 “(B) Any producer operating an establishment
6 registered under this section shall inform the Admin-
7 istrator within 30 days after the establishment is
8 registered of—

9 “(i) the types and quantities of pesticides,
10 and active ingredients used in producing pesti-
11 cides, that are produced for export to a foreign
12 country; and

13 “(ii) the date of export and quantity of
14 pesticides and active ingredients exported to
15 each foreign country to which the producer has
16 exported during the past 365-day period.

17 “(C) The information required by this para-
18 graph shall be kept current and submitted to the
19 Administrator annually as required under such regu-
20 lations as the Administrator may prescribe.”.

21 **SEC. 103. PROTECTION OF TRADE SECRETS AND OTHER IN-**
22 **FORMATION.**

23 Section 10(d) of the Federal Insecticide, Fungicide,
24 and Rodenticide Act (7 U.S.C. 136h(d)) is amended by
25 adding at the end the following new paragraph:

1 “(4) Notwithstanding any other provision of
2 this Act, the information submitted to the Adminis-
3 trator under section 7(c)(1)(B)(ii), 17(a)(2),
4 17(a)(3), 17(a)(4), 17(a)(5), or 17(a)(6) shall not be
5 treated as confidential under subsection (b).”.

6 **SEC. 104. UNLAWFUL ACTS.**

7 Section 12(a)(2) of the Federal Insecticide, Fungi-
8 cide, and Rodenticide Act (7 U.S.C. 136j(a)(2)) is
9 amended—

10 (1) by striking “or” at the end of subparagraph
11 (R);

12 (2) by striking the period at the end of sub-
13 paragraph (S) and inserting “; or”; and

14 (3) by adding at the end the following new sub-
15 paragraph:

16 “(T) to export a pesticide or device in vio-
17 lation of section 17.”.

18 **SEC. 105. IMPORTS AND EXPORTS.**

19 (a) PESTICIDES OR DEVICES INTENDED FOR EX-
20 PORT.—Subsections (a) and (b) of section 17 of the Fed-
21 eral Insecticide, Fungicide, and Rodenticide Act (7 U.S.C.
22 136o) are amended to read as follows:

23 “(a) PESTICIDES OR DEVICES INTENDED FOR EX-
24 PORT.—

25 “(1) GENERAL REQUIREMENTS.—

6

1 “(A) No pesticide or device may be export-
2 ed to a foreign country unless—

3 “(i) the pesticide or device is prepared
4 and packaged according to the specifica-
5 tions of the foreign purchaser and the legal
6 requirements of the country of use and
7 complies with this section and sections
8 2(q), 7, 8, 19(a), and 19(e); and

9 “(ii) the label of the pesticide—

10 “(I) is written in an official lan-
11 guage of the country of use; and

12 “(II) to the extent not in conflict
13 with requirements of the country of
14 use, contains all health, safety, envi-
15 ronmental, and other related informa-
16 tion required to be included under sec-
17 tion 3 in the labeling for the pesticide
18 for use in the United States.

19 “(B)(i) No person shall export to any
20 country of use a pesticide if—

21 “(I) the registrations for pesticides
22 containing an active ingredient that is in-
23 cluded in the pesticide to be exported and
24 that account for all or nearly all of the

7

1 uses of the active ingredient by volume in
2 the United States have been canceled;

3 "(II) the tolerances that have been es-
4 tablished under section 408 or 409 of the
5 Federal Food, Drug, and Cosmetic Act (21
6 U.S.C. 346a or 348) for an active ingredi-
7 ent of the pesticide to be exported and that
8 account for all or nearly all of the agricul-
9 tural uses of the ingredient have been re-
10 voked; or

11 "(III) the Administrator has deter-
12 mined that an active ingredient of the pes-
13 ticide is ineligible for reregistration pursu-
14 ant to section 4(g)(2)(C).

15 "(ii) No person shall export to any country
16 of use a pesticide unless—

17 "(I) the pesticide is registered with
18 the Administrator under section 3; or

19 "(II) all of the active ingredients in
20 the pesticide are the subject of a food tol-
21 erance established under section 408 or
22 409 of the Federal Food, Drug, and Cos-
23 metic Act.

24 "(iii) No person shall export to any coun-
25 try of use a pesticide if the pesticide is for use

1 in connection with agricultural production relat-
2 ed to food use unless—

3 “(I) the pesticide is registered under
4 section 3 with the Administrator for use in
5 connection with agricultural production re-
6 lated to food; or

7 “(II) the active ingredients of the pes-
8 ticide are the subject of a food tolerance
9 established under section 408 or 409 of the
10 Federal Food, Drug, and Cosmetic Act.

11 “(iv) A tolerance whose revocation or sus-
12 pension has been delayed pursuant to section
13 408(p) of the Federal Food, Drug, and Cosmet-
14 ic Act shall be considered to have been revoked
15 or suspended for purposes of this section.

16 “(v) Temporary tolerances established pur-
17 suant to section 408(j) of the Federal Food,
18 Drug, and Cosmetic Act, and tolerances set at
19 a zero level pursuant to section 408(b) of such
20 Act, shall have no effect for purposes of this
21 section.

22 “(C) A pesticide shall be considered to be
23 for use in conjunction with agricultural produc-
24 tion related to food use in a country of use, for

1 purposes of this section, if there is substantial
2 evidence that, in the country of use—

3 “(i) on the basis of the advertising,
4 promotion, packaging, distribution, label-
5 ing of the pesticide, or other circum-
6 stances, it is probable that the pesticide
7 may be used in connection with agricultur-
8 al production related to food use;

9 “(ii) patterns of pesticide marketing
10 or use indicate that it is probable that the
11 pesticide may be used in connection with
12 agricultural production related to food use;

13 “(iii) the pesticide is in use in connec-
14 tion with agricultural production related to
15 food use; or

16 “(iv) the quantity of the pesticide that
17 an exporter intends to export to a country
18 of use exceeds the quantity, on the basis of
19 expectations of use, that could be used in
20 the country of use for use other than in
21 connection with agricultural production re-
22 lated to food use.

23 “(2) ADDITIONAL REQUIREMENTS FOR THE EX-
24 PORT OF CERTAIN PESTICIDES.—

10

1 “(A) The export of the following pesticides
2 shall be subject to the additional requirements
3 set forth in this paragraph:

4 “(i) Pesticides for which a restricted
5 use classification is effective under section
6 3.

7 “(ii) Pesticides that are subject to an
8 order of suspension under section 6(c).

9 “(iii) Pesticides that are the subject of
10 a cancellation proceeding under section
11 6(b).

12 “(iv) Pesticides that are the subject of
13 a conditional registration under section
14 3(c)(7)(C).

15 “(v) Pesticides that are the subject of
16 an interim administrative review described
17 in section 3(c)(8).

18 “(vi) Pesticides that contain an active
19 ingredient that is included on the World
20 Health Organization list of Class 1A, ‘ex-
21 tremely hazardous’, or Class 1B, ‘highly
22 hazardous’, pesticides.

23 “(vii) Pesticides that contain an active
24 ingredient that was the subject of a regis-

1 tration under section 3 that was canceled,
2 or was amended to delete a registered use.

3 “(viii) To the extent not in conflict
4 with requirements of the country of use,
5 the pesticide is not packaged, and stored,
6 in conformity with standards for composi-
7 tion and quality of the Food and Agricul-
8 ture Organization of the United Nations.

9 “(ix) Pesticides that contain an ingre-
10 dient that is the subject of an administra-
11 tive review by Administrator as to whether
12 the ingredient is inert, or that the Admin-
13 istrator has determined by rule are of Tox-
14 icological Concern for purposes of this Act.

15 “(B)(i) Prior to shipment of a pesticide
16 that is subject to the requirements of this para-
17 graph, the exporter shall provide to the Admin-
18 istrator notice of shipment that identifies—

19 “(I) the common or trade names by
20 which the pesticide is known in the country
21 of use;

22 “(II) a complete chemical description
23 of the active ingredients of the pesticide,
24 including any commonly accepted, chemical
25 (generic), or abbreviated chemical name

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1 known in the country of use for the active
2 ingredients;

3 “(III) the name and address of the
4 producer and exporter;

5 “(IV) the name and address of the
6 foreign purchaser;

7 “(V) the intended date and quantity
8 of shipment of the pesticide;

9 “(VI) a description of the manner of
10 transport of the shipment;

11 “(VII) the name of the country of use
12 that is the ultimate destination of the ship-
13 ment; and

14 “(VIII) the name of the raw agricul-
15 tural commodity (as defined in section
16 201(r) of the Federal Food, Drug, and
17 Cosmetic Act (21 U.S.C. 321(r)), or proc-
18 essed food, if any, on which the pesticide
19 is intended or likely to be used.

20 “(ii) For each pesticide identified in a no-
21 tice submitted under clause (i), if the notice is
22 the first such notice that identifies a country of
23 use for the pesticide that is received by the Ad-
24 ministrator during the 12-month period imme-
25 diately preceding the date of the receipt of the

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1 notice, the Administrator shall, within 20 days
2 of the receipt of the notice submitted under
3 clause (i), notify the appropriate official in the
4 appropriate regulatory department or agency
5 designated by the country of use and the office
6 responsible for the International Register of Po-
7 tentially Toxic Chemicals of the intended ex-
8 port.

9 “(iii) The notice by the Administrator re-
10 quired under clause (ii) shall contain a descrip-
11 tion in English, and in an official language of
12 the country of use, of—

13 “(I) the information required by
14 clause (i);

15 “(II) if the pesticide is subject to a
16 conditional registration under section
17 3(c)(7)(C), an interim administrative re-
18 view or suspension or cancellation proceed-
19 ing, or is classified for restricted use under
20 this Act, a statement explaining the rea-
21 sons for that status;

22 “(III) alternatives known to the Ad-
23 ministrator, including nonchemical alterna-
24 tives, to the use of the pesticide; and

1 “(IV) the name and address of the of-
2 fice of the Environmental Protection Agen-
3 cy that, on request of an appropriate offi-
4 cial of the country of use, will provide ad-
5 ditional information concerning the pesti-
6 cide and alternatives to the use of the pes-
7 ticide.

8 “(iv) The notice by the Administrator re-
9 quired under clause (ii) shall clearly inform its
10 recipient—

11 “(I) that, pursuant to paragraph (3),
12 the pesticide will not be exported to the
13 country of use if the country of use does
14 not consent to the export of the pesticide;

15 “(II) that the country of use may give
16 conditional consent to the export of the
17 pesticide, except that the conditions will
18 not be honored unless the country of use
19 informs the Administrator of the condi-
20 tions; and

21 “(III) of the manner in which the
22 country of use may inform the Administra-
23 tor that it consents, does not consent, or
24 gives conditional consent.

1 “(3) EXPORTS NOT PERMITTED AS OFFENSIVE
2 TO THE PUBLIC POLICY OF THE COUNTRY OF
3 USE.—

4 “(A) If a country informs the Administra-
5 tor, or an international agency of which the
6 United States is a member, that the country
7 does not consent or gives conditional consent to
8 the importation of a pesticide or class of pesti-
9 cides, the Administrator shall publish a notice
10 in the Federal Register that the Administrator
11 has been so informed, not later than 10 days
12 after the receipt by the Administrator of the in-
13 formation.

14 “(B) The Administrator shall publish such
15 a notice concerning a specific country of use—

16 “(i) in response to a communication
17 received from a country of use in response
18 to a notice issued by the Administrator in
19 accordance with paragraph (2)(B)(ii) that
20 informs the Administrator that the country
21 of use refuses to consent to the importa-
22 tion of the pesticide or gives conditional
23 consent, except that the failure of the
24 country of use to respond to the Adminis-
25 trator's notice within 120 days of the date

1 on which the Administrator issues the no-
2 tice shall be considered a refusal of con-
3 sent; or

4 “(ii) in accordance with a treaty or
5 international agreement to which the Unit-
6 ed States is a party; or

7 “(iii) in response to a communication
8 received by the Administrator from an ap-
9 propriate official of the country of use, in-
10 forming the Administrator that the coun-
11 try of use does not consent to the importa-
12 tion of the pesticide or that the country of
13 use gives conditional consent to the impor-
14 tation of the pesticide.

15 “(C) Subsequent to the publication of such
16 a notice—

17 “(i) no such pesticide may be exported
18 to a country of use that has refused con-
19 sent; and

20 “(ii) no such pesticide may be export-
21 ed to a country of use that has given con-
22 ditional consent unless the conditions on
23 which the consent was given are met.

24 “(D) Any refusal of consent or conditional
25 consent by a country of use shall be considered

1 as continuing in nature and shall be effective
2 until modified or withdrawn by the country of
3 use.

4 “(E) A refusal by a country of use to con-
5 sent to the importation of a pesticide shall not
6 be effective unless the country of use certifies
7 to the Administrator that it—

8 “(i) is not producing and will not
9 produce the pesticide or a similar product
10 with the same active ingredient; and

11 “(ii) is not importing and will not
12 consent to the importation of the pesticide
13 or a similar product with the same active
14 ingredient from any other country.

15 “(F) If the Administrator makes a deter-
16 mination that a country of use is not in compli-
17 ance with the certification provided under sub-
18 paragraph (E), the Administrator shall prompt-
19 ly withdraw the notice published under subpara-
20 graph (A).

21 “(4) TEMPORARY WAIVER FOR CONTROL OF
22 COMMUNICABLE DISEASE.—On the request of the
23 government of a country of use, the Administrator
24 may issue a temporary waiver from any requirement
25 under paragraph (1), (2), or (3) to permit the export

1 to a country of use of a pesticide that does not oth-
2 erwise meet the requirements for export under para-
3 graph (1), (2), or (3) to prevent the imminent
4 spread or to arrest the spread of a communicable
5 disease of humans that poses a serious threat to
6 public health in the country of use, if—

7 “(A) based on the certification of the coun-
8 try of use and all other information available to
9 the Administrator, the Administrator makes a
10 determination that—

11 “(i) the pesticide is to be used on a
12 temporary basis for a period of time that
13 shall not exceed 180 days;

14 “(ii) there is no practical chemical or
15 nonchemical alternative to using the pesti-
16 cide to prevent the imminent spread or ar-
17 rest the spread of a communicable disease
18 that poses a serious threat to the public
19 health in the country of use; and

20 “(iii) the pesticide will not be used as
21 part of a routine continuing pest control
22 program;

23 “(B) no quantity of the pesticide shall be
24 exported in excess of a quantity that the Ad-
25 ministrator, in consultation with the country of

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1 use, determines to be necessary to accomplish
2 the purpose for the use of the pesticide under
3 this paragraph;

4 “(C) the exporter agrees to provide for the
5 return from the country of use any unused or
6 excess quantities of the pesticide at the time the
7 purpose for the use of the pesticide under this
8 paragraph has been accomplished; and

9 “(D) the Administrator publishes a notice
10 in the Federal Register prior to the exportation
11 of the pesticide, or as soon thereafter as practi-
12 cable, that includes—

13 “(i) the request made by the country
14 of use;

15 “(ii) the factual basis for any determi-
16 nation that the Administrator makes under
17 this paragraph;

18 “(iii) the identity of the exporter and
19 the country of use;

20 “(iv) the quantity and identity of the
21 pesticide (including a complete chemical
22 description of the active ingredient of the
23 pesticide that includes any commonly ac-
24 cepted chemical (generic), or abbreviated
25 chemical name of the active ingredient)

1 that the Administrator authorizes for ex-
2 port under this paragraph; and

3 “(v) the estimated dates of export for
4 the pesticide.

5 “(5) TEMPORARY WAIVER IN CIRCUMSTANCES
6 OF FAMINE.—On the request of the government of
7 the country of use, the Administrator may issue a
8 temporary waiver from any requirement under para-
9 graph (1), (2), or (3) to permit the export of a pesti-
10 cide that does not otherwise meet the requirements
11 for export under paragraph (1), (2), or (3) to stop
12 the spread or to prevent the imminent spread of a
13 pest that is destroying or will destroy sufficient
14 quantities of the food supply of the country of use
15 so as to result in widespread famine or human star-
16 vation in the country of use, if—

17 “(A) based on the certification of the coun-
18 try of use and all other information available to
19 the Administrator, the Administrator makes a
20 determination that—

21 “(i) the pesticide is to be used on a
22 temporary basis for a period of not to ex-
23 ceed 180 days;

24 “(ii) the pesticide will only be used to
25 stop the spread or to prevent the imminent

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1 spread of a pest that is destroying or will
2 destroy sufficient quantities of the food
3 supply of the country of use so as to result
4 in widespread famine or human starvation
5 in the country of use;

6 “(iii) there is no practical chemical or
7 nonchemical alternative to the use of the
8 pesticide to stop the spread or to prevent
9 the imminent spread of the pest in the
10 country of use in time to prevent the de-
11 struction of such quantities of the food
12 supply of the country of use as to result in
13 human starvation in the country of use;

14 “(iv) the pesticide will not be used as
15 part of a routine, continuing pest control
16 program; and

17 “(v) based on information provided by
18 the country of use, food supplies that are
19 stored in the country of use, available for
20 purchase by the country of use, or are like-
21 ly to be made otherwise available to the
22 country of use, are not likely to be ade-
23 quate to prevent widespread famine or
24 human starvation caused by the pest in the
25 country of use;

1 “(B) no quantity of the pesticide shall be
2 exported in excess of a quantity that the Ad-
3 ministrator, in consultation with the country of
4 use, determines to be necessary to accomplish
5 the purpose for the use of the pesticide under
6 this paragraph;

7 “(C) the exporter agrees to provide for the
8 return from the country of use any unused or
9 excess quantities of the pesticide at the time the
10 purpose for the use of the pesticide under this
11 paragraph has been accomplished; and

12 “(D) the Administrator publishes a notice
13 in the Federal Register prior to the exportation
14 of the pesticide, or as soon thereafter as practi-
15 cable, that includes—

16 “(i) the request made by the country
17 of use;

18 “(ii) the factual basis for any determi-
19 nation that the Administrator makes under
20 this paragraph;

21 “(iii) the identity of the exporter and
22 the country of use;

23 “(iv) the quantity and identity of the
24 pesticide (including a complete chemical
25 description of the active ingredient of the

1 pesticide that includes any commonly ac-
2 cepted chemical (generic), or abbreviated
3 chemical name of the active ingredient)
4 that the Administrator authorizes for ex-
5 port under this paragraph; and

6 “(v) the estimated dates of export for
7 the pesticide.

8 “(6) SPECIAL EXEMPTION FOR THE EXPORT OF
9 EXPERIMENTAL PESTICIDES.—

10 “(A) An exporter may export a pesticide
11 for experimental use in a country of use if—

12 “(i) the active ingredients of the pesti-
13 cides have not been and are not the subject
14 of any registration under section 3; and

15 “(ii) the pesticide is to be used only
16 for research or experimental purposes.

17 “(B) No pesticide subject to this Act may
18 be exported for experimental use without the
19 written consent of the government of the coun-
20 try of use. The consent shall be obtained in the
21 manner prescribed in this paragraph.

22 “(C)(i) In order to obtain the written con-
23 sent of the government of country of use, the
24 exporter shall submit a written request for con-
25 sent to export the experimental pesticide to the

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1 Administrator and to the government of the
2 country of use.

3 “(ii) The Administrator shall transmit to
4 the appropriate official in the appropriate agen-
5 cy responsible for the regulation of pesticides in
6 the country of use the written request, a sum-
7 mary of all available information relating to the
8 actual and potential adverse effects of the ex-
9 perimental pesticide on human health and the
10 environment prepared by the Administrator,
11 and a complete statement of the factual basis
12 for the issuance by the Administrator of an ex-
13 perimental use permit under section 5(a) for
14 the pesticide if the permit has been issued for
15 the pesticide.

16 “(iii) Not later than 60 days after the re-
17 ceipt of a request under clause (ii), the Admin-
18 istrator shall certify whether the request meets
19 the requirements of clause (iv).

20 “(iv) On receipt of a request for consent to
21 export an experimental pesticide, the Adminis-
22 trator shall publish in the Federal Register a
23 notice of the receipt of the response. The notice
24 shall identify the experimental pesticide, crop,
25 and target pest that is the subject of the re-

25

1 quest, the producer and exporter of the pesti-
2 cide, and the country of use to which the re-
3 quest for permission to export of the pesticide
4 was transmitted.

5 “(v) The written request transmitted by
6 the Administrator to the country of use shall be
7 subject to public review.

8 “(D) A written request for consent that is
9 submitted to the Administrator for transmittal
10 to the country of use, and submitted to the
11 country of use, shall identify the pesticide for
12 experimental use and the active ingredients of
13 the pesticide and include—

14 “(i) the name of the exporter;

15 “(ii) the trade names and chemical
16 names of the active ingredients of the pes-
17 ticide (including any commonly accepted,
18 generic, or abbreviated chemical names);

19 “(iii) a complete description of the
20 proposed experimental activity, including
21 the formulation of the pesticide, the appli-
22 cation rates and methods, the pests that
23 are sought to be controlled, the locations
24 where the experimental use will be made,
25 the size of the areas where the experimen-

1 tal pesticide will be applied, the dates on
2 which the experiment will be conducted,
3 and the manner in which experimental
4 data will be collected and recorded;

5 “(iv) the name of the persons who
6 shall be responsible for the design and exe-
7 cution of the experiment and for the eval-
8 uation of the results of the experiment,
9 along with the qualifications of the per-
10 sons;

11 “(v) the name, address, and qualifica-
12 tions of the person who will be the repre-
13 sentative of the exporter in the country of
14 use and, if different, the name, address,
15 and qualifications of the person in the
16 country of use who will supervise the ex-
17 periment;

18 “(vi) the location and manner of stor-
19 age of the pesticide in the country of use;

20 “(vii) the protective techniques, de-
21 vices, and measures that will be provided
22 to protect the health and safety of workers
23 who will apply the pesticide and the health
24 and safety of persons who live or work

1 near the intended location of the experi-
2 ment;

3 "(viii) a complete description of the
4 results of all information known to the ex-
5 porter of the toxic effects of the pesticide,
6 including its effects on the pest that is to
7 be controlled, its effects on plants and ani-
8 mals other than the pest that is likely to
9 be controlled (with special reference to
10 plant and animal species at and near the
11 intended location of the experiment, includ-
12 ing any crops or livestock to which the pes-
13 ticide may be applied), and its chronic and
14 acute effects on human health;

15 "(ix) a complete description of all in-
16 formation known by the exporter concern-
17 ing the environmental persistence and fate
18 of the pesticide, including the rate and
19 manner of its degradation, its retention
20 within plants and livestock, and its move-
21 ment within water supplies;

22 "(x) a written agreement by the ex-
23 porter to promptly advise the country of
24 use of any changes, revisions, or additions
25 in the facts, circumstances, and informa-

1 tion that relate to the disclosures and that
2 are required by this paragraph;

3 “(xi) a written certification by the ex-
4 porter that the pesticide will be used only
5 for experimental purposes, and will not be
6 used for any commercial purpose;

7 “(xii) a written agreement by the ex-
8 porter that the exporter will destroy any
9 crops or livestock to which the pesticide is
10 applied or that the crops or livestock will
11 be fed only to experimental animals that
12 will be destroyed and not used for food
13 purposes; and

14 “(xiii) such other disclosures as the
15 Administrator may by regulation require.

16 “(E) Before transmitting the written re-
17 quest to the country of use, the Administrator
18 may require that studies be conducted to deter-
19 mine whether the use of the pesticide under the
20 conditions of the experimental use may cause
21 unreasonable adverse effects on human health
22 or the environment. The Administrator may
23 also amend the request to limit the time during
24 which the pesticide may be exported or used, or
25 to limit the amount that may be exported.

1 “(F) On the request of the appropriate of-
2 ficial of the country of use, the Administrator
3 shall provide a copy of any records in the files
4 of the Administrator that are associated with
5 an application for an experimental use permit
6 pursuant to section 5(a).

7 “(G) The country of use may consent,
8 deny consent, or consent to the request on such
9 terms and conditions as the country of use de-
10 termines to be appropriate, and notify the Ad-
11 ministrator and exporter of the decision.

12 “(H) If the official of the country of use
13 sends to the Administrator a written notice of
14 consent to the use of the pesticide for research
15 or experimental use, the Administrator shall,
16 not later than 5 working days after receipt of
17 the notice, notify the exporter of the pesticide.

18 “(I) On receipt of the written notice of
19 consent from the Administrator or the country
20 of use, the exporter of the pesticide may export
21 the pesticide in accordance with—

22 “(i) the terms of the request submit-
23 ted under this paragraph;

1 “(ii) any terms or condition in the
2 written notice of consent issued by the offi-
3 cial of the country of use; and

4 “(iii) the requirements of this section.

5 “(J) If the exporter exports the experimen-
6 tal pesticide pursuant to a written notice of
7 consent received by the exporter from the gov-
8 ernment of the country of use, not from the Ad-
9 ministrator, the experimental pesticide may not
10 be exported until the exporter has transmitted
11 to the Administrator a copy of the written no-
12 tice of consent.

13 “(K) The request for consent and the no-
14 tice of consent issued by the country of use
15 shall be subject to public review and inspection.

16 “(L) A producer or exporter of a pesticide
17 that exports a pesticide for research or experi-
18 mental use to a country of use pursuant to this
19 paragraph shall be subject to the requirements
20 of sections 2(p), 2(q), 7, and 8.

21 “(7) COOPERATION AND COORDINATION WITH
22 FOOD INSPECTION SERVICES.—

23 “(A) The Administrator shall regularly
24 consult with the Secretary of Health and
25 Human Services concerning the inspection by

1 the Department of Health and Human Services
2 of imported food for pesticide residues.

3 “(B)(i) The Administrator shall regularly
4 prepare a compilation of the information sub-
5 mitted to the Administrator under this section,
6 and the information submitted under section
7 7(c)(1)(B), and shall provide the compilation to
8 the Secretary of Health and Human Services.

9 “(ii) The compilation shall—

10 “(I) be organized in a manner so as
11 to provide the Secretary of Health and
12 Human Services with information that will
13 assist the Secretary in the inspection of
14 imported food for pesticide residues;

15 “(II) be organized and presented in
16 such a manner as to facilitate the incorpo-
17 ration of the compilation into the data
18 management system maintained by the
19 Secretary pursuant to section 4702(a) of
20 the Omnibus Trade and Competitiveness
21 Act of 1988 (21 U.S.C. 1401(a)); and

22 “(III) include such additional infor-
23 mation as the Administrator determines is
24 useful to carry out this paragraph.

1 “(iii) The Administrator shall prepare the
2 compilation as expeditiously as possible so as to
3 provide the compilation to the Secretary of
4 Health and Human Services and the Secretary
5 of Agriculture in a timely manner and in no
6 event less frequently than once each 6 months.

7 “(b) NOTICES OF REGULATORY EVENTS FURNISHED
8 TO FOREIGN GOVERNMENTS.—

9 “(1) IN GENERAL.—The Administrator shall,
10 not later than 30 days after the effective date of an
11 action described in this paragraph, transmit a notice
12 to the appropriate officials of the appropriate de-
13 partments or agencies of all countries, and to the of-
14 fice responsible for the International Register of Po-
15 tentially Toxic Chemicals. The Administrator shall
16 provide the notice each time—

17 “(A) a registration or a cancellation
18 (whether voluntary or involuntary) or suspen-
19 sion, due in whole or in part to human health
20 or environmental risks, of the registration of a
21 pesticide becomes effective or ceases to be effec-
22 tive under this Act;

23 “(B) a pesticide is first classified for re-
24 stricted use under this Act;

1 “(C) a registration of a pesticide is made
2 subject to conditions under section 3(c)(7)(C);

3 “(D) a pesticide is made subject to an in-
4 terim administrative review under section
5 3(c)(8); or

6 “(E) a pesticide is found to be ineligible
7 for reregistration pursuant to section
8 4(g)(2)(C).

9 “(2) CONTENTS OF NOTICE.—The notice de-
10 scribed in paragraph (1) shall include—

11 “(A) the factual basis on which the Admin-
12 istrator made any findings in support of the
13 regulatory action that is the subject of the no-
14 tice;

15 “(B) an explanation of the legal signifi-
16 cance of the regulatory action;

17 “(C) information available to the Adminis-
18 trator in the case of any action that causes a
19 pesticide to be subject to subsection (a)(2)—

20 “(i) concerning other pesticides regis-
21 tered under section 3 that could be used as
22 an alternative to the pesticide including—

23 “(I) a complete summary of the
24 regulatory status under this Act of
25 any alternative pesticide; and

1 “(II) a summary of possible ad-
2 verse effects on human health or on
3 the environment that any alternative
4 pesticide may cause;

5 “(ii) nonchemical alternatives to the
6 pesticide;

7 “(iii) the names and addresses of gov-
8 ernmental and nongovernmental interna-
9 tional organizations that the Administrator
10 determines to be capable of providing in-
11 formation concerning nonchemical alterna-
12 tives to the pesticide; and

13 “(iv) the name and address of the of-
14 fice of the Environmental Protection Agen-
15 cy that will, on request, provide additional
16 information concerning any pesticide that
17 is subject to regulatory action, and alterna-
18 tives to the pesticide.”.

19 (b) COOPERATION IN INTERNATIONAL EFFORTS.—
20 Subsection (d) of section 17 of such Act is amended to
21 read as follows:

22 “(d) COOPERATION IN INTERNATIONAL EFFORTS.—
23 The Administrator shall—

24 “(1) sponsor, in cooperation with the Agency
25 for International Development of the Department of

1 State, the Food and Drug Administration of the De-
2 partment of Health and Human Services, the United
3 States Department of Agriculture, the United Na-
4 tions Environment Program and agencies, Food and
5 Agriculture Organization, and any other appropriate
6 Federal agencies or departments, not later than 1
7 year after the date of the enactment of this subsec-
8 tion, a meeting of representatives of foreign govern-
9 ments, nongovernmental organizations, and other in-
10 terested parties, and sponsor such additional meet-
11 ings, as the Administrator determines to be neces-
12 sary to promote the development and implementa-
13 tion of improved research and regulatory programs
14 for pest management, and improved strategies for
15 sustainable agriculture, including the promotion and
16 development of integrated pest management and
17 nonchemical alternatives;

18 “(2) to the fullest extent possible, provide for-
19 eign countries with technical assistance to develop
20 comprehensive pesticide regulatory programs; and

21 “(3) not later than 1 year after the date of en-
22 actment of this subsection, convene, a meeting of
23 representatives of foreign governments, nongovern-
24 mental organizations, and other interested parties,
25 and sponsor such other meetings as may be neces-

1 sary, to actively encourage the adoption of a binding
2 multilateral convention requiring standard, mandato-
3 ry notice and export control measures for pesti-
4 cides.”.

5 (c) CITIZEN ASSISTANCE IN ENFORCEMENT; APPLI-
6 CATION OF SECTION.—Section 17 of such Act is
7 amended—

8 (1) by redesignating subsection (e) as subsec-
9 tion (g); and

10 (2) by inserting after subsection (d) the follow-
11 ing new subsection:

12 “(e) CITIZEN ASSISTANCE IN ENFORCEMENT.—

13 “(1) CIVIL ENFORCEMENT ACTIONS.—Any per-
14 son may bring a civil action in a United States dis-
15 trict court to secure the imposition of a civil penalty
16 by the court on any person who commits an unlaw-
17 ful act specified in section 12(a)(2)(T). Jurisdiction
18 and venue shall be proper in the judicial district in
19 which the unlawful act was committed, where the de-
20 fendant resides, or where the defendant has a regu-
21 larly established place of business. If the court finds
22 that an unlawful act has been committed, the court
23 shall impose a penalty on the person committing the
24 act in accordance with section 14(a). One half of the
25 penalty shall be for the use of the United States and

1 one half of the penalty shall be paid to the person
2 who brought the civil action. The court may also im-
3 pose, as a further penalty, the plaintiff's costs in
4 bringing the civil action, including reasonable attor-
5 ney's fees, expert witness fees, and expenses.

6 “(2) BAD FAITH ACTIONS.—If the court finds
7 that no unlawful act has been committed, that the
8 civil action was brought in bad faith, and that the
9 civil action was either brought without reasonable in-
10 quiry as to the facts concerning the alleged unlawful
11 act or was not warranted by existing law or by a
12 good faith argument for the extension, reversal, or
13 modification of an existing interpretation of law, the
14 court may impose a sanction on the person who
15 brought the civil action, and the attorneys of the
16 person, of not more than \$5,000 and may order
17 them to pay the reasonable costs of the party ac-
18 cused of committing the unlawful act, including rea-
19 sonable attorney's fees.

20 “(3) NOTICE REQUIRED.—No person may bring
21 a civil action under this subsection unless the person
22 informs the Administrator 60 days before filing a
23 complaint that a civil action will be brought and also
24 informs the Administrator of the complete factual
25 basis for bringing the civil action.

1 “(4) SAME UNLAWFUL ACTS.—No civil action
2 may be initiated pursuant to this subsection on the
3 basis of the same unlawful acts that form the basis
4 for proceedings that have already been initiated
5 under section 14(b) for a criminal violation of this
6 Act. If proceedings are initiated under section 14(b)
7 for a criminal violation of this Act on the basis of
8 the same unlawful acts that form the basis of a civil
9 action that has already been initiated pursuant to
10 this subsection, the civil action, to the extent that it
11 is based on the same acts, shall be dismissed without
12 costs to either party.

13 “(f) APPLICATION OF SECTION.—

14 “(1) IN GENERAL.—This section governs the
15 export and import of all pesticides that are subject
16 to this Act.

17 “(2) NO EXEMPTION.—This Act shall not be
18 construed to exempt any pesticide or device that is
19 subject to this Act from any requirement of this sec-
20 tion, except in the case of a pesticide or device the
21 domestic use of which is exempt from this Act pur-
22 suant to section 25(b).”.

1 SEC. 106. HEALTH AND ENVIRONMENTAL EFFECTS RE-
2 PORTS.

3 (a) IN GENERAL.—Not later than 1 year after the
4 effective date of this Act, and each 4 years thereafter, the
5 Comptroller General shall report to Congress on—

6 (1) the operation and effect of this Act (and the
7 amendments made by this Act), including the ad-
8 ministration of this Act (and such amendments);
9 and

10 (2) how exported pesticides and their containers
11 are used and disposed of, and their impact on the
12 public health and environment of the countries of
13 use.

14 (b) INFORMATION.—The Comptroller General shall
15 solicit information to carry out this section from knowl-
16 edgeable parties, including the governments of the coun-
17 tries of use, exporters and nongovernmental organizations.

18 SEC. 107. CONFORMING AMENDMENTS TO TABLE OF CON-
19 TENTS.

20 The table of contents in section i(b) of the Federal
21 Insecticide, Fungicide, and Rodenticide Act (7 U.S.C.
22 prec. 121) is amended—

23 (1) by adding at the end of the items relating
24 to section 2 the following new item:

"(hh) Country of use.;"

1 and

2 (2) by striking the items relating to section 17

3 and inserting the following new items:

"Sec. 17. Imports and exports.

"(a) Pesticides or devices intended for export.

"(1) General requirements.

"(2) Additional requirements for the export of certain pesticides.

"(3) Exports not permitted as offensive to the public policy of the country of use.

"(4) Temporary waiver for control of communicable disease.

"(5) Temporary waiver in circumstances of famine.

"(6) Special exemption for the export of experimental pesticides.

"(7) Cooperation and coordination with food inspection services.

"(b) Notices of regulatory events furnished to foreign governments.

"(1) In general.

"(2) Contents of notice.

"(c) Importation of pesticides and devices.

"(d) Cooperation in international efforts.

"(e) Citizen assistance in enforcement.

"(1) Civil enforcement actions.

"(2) Bad faith actions.

"(3) Notice required.

"(4) Same unlawful acts.

"(f) Application of section.

"(1) In general.

"(2) No exemption.

"(g) Regulations."

4 TITLE II—PESTICIDE RESIDUE 5 MONITORING

6 SEC. 201. DATA MANAGEMENT.

7 Subsection (c) of section 4702 of the Omnibus Trade
8 and Competitiveness Act of 1988 (21 U.S.C. 1401(c)) is
9 amended to read as follows:

1 “(c) VOLUME DATA.—The Food and Drug Adminis-
2 tration shall use the computerized data management sys-
3 tems placed into effect under subsection (a)(1) to summa-
4 rize the volume of each type of food product subject to
5 the requirements of the Federal Food, Drug, and Cosmet-
6 ic Act (21 U.S.C. 321 et seq.) that is imported into the
7 United States in quantities that are determined by the
8 Secretary of Health and Human Services to be commercial
9 quantities. The summary shall be made by food product,
10 country of origin, port of entry, pesticides for which the
11 Secretary routinely monitors, pesticide residues detected,
12 and the quantity of each pesticide exported from the Unit-
13 ed States to the country of origin for agricultural use. The
14 summary shall also indicate the volume of each type of
15 food actually tested for pesticide residues, arranged by
16 pesticide, food, and country of origin. Information with re-
17 spect to volumes of food products and exported pesticides
18 to be included in this summary shall, to the extent feasi-
19 ble, be obtained from other Federal agencies.”.

TITLE III—PESTICIDE TOLERANCES

SEC. 301. REVOCATION OF TOLERANCES AND PRACTICAL TESTING METHODS.

Section 408 of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 346a) is amended by adding at the end the following new subsections:

“(p)(1)(A) If the Administrator, acting under the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136 et seq.), with or without the consent of the registrant, either cancels the registration of each pesticide that contains a particular pesticide chemical and that is registered for use on a particular food, or requires that the registration of each such pesticide be modified to prohibit the use of the pesticide in connection with the production, storage, processing, or transportation of the food, the Administrator shall revoke any tolerance or exemption under this section or section 409 that permits the presence of the pesticide chemical, or any pesticide chemical that results from its use, in or on the food. The Administrator shall, not later than 30 days after the date on which this subparagraph initially applies to the pesticide chemical, publish a notice in the Federal Register issuing an order revoking any tolerance or exemption for the use estab-

1 lished under this section or section 409 for the pesticide
2 chemical in or on the food.

3 “(B) The effective date of a revocation described in
4 subparagraph (A) shall be 180 days after the date on
5 which subparagraph (A) initially applies to the pesticide
6 chemical.

7 “(C) The Administrator may delay the effective date
8 of a modification or revocation of a tolerance or exemption
9 from the requirement of a tolerance for a pesticide chemi-
10 cal residue in or on a food under this section or section
11 409 if the modification or revocation would require a lower
12 level of the pesticide chemical residue in or on the food
13 than the level in effect under the tolerance or exemption
14 immediately before the date the modification or revocation
15 would otherwise take effect.

16 “(D) The Administrator may delay the effective date,
17 to permit the tolerance or exemption to remain at the level
18 in effect immediately before the date the modification or
19 revocation would otherwise take effect, for the period of
20 time that the Administrator determines is necessary to
21 allow foods that could contain the pesticide chemical resi-
22 due as a result of lawful application of the pesticide chemi-
23 cal prior to the date the modification or revocation would
24 otherwise take effect to be sold to consumers in the course

1 of the usual practice for the production, processing, trans-
2 portation, storage, and distribution of that type of food.

3 “(E) The Administrator shall designate the delayed
4 effective date and describe the determinations supporting
5 the selection of the date in the order modifying or revoking
6 the tolerance or exemption.

7 “(F) Notwithstanding subparagraph (C) or (D), the
8 Administrator shall, in the order modifying or revoking
9 the tolerance or exemption, establish a shorter period of
10 time for delay of the effective date, or provide for no delay
11 of the effective date, for the modification or revocation,
12 if the Administrator determines that the shorter period,
13 or no delay of the effective date, is necessary to protect
14 the public health during the period of the delay that would
15 be required under subparagraph (C) or (D).

16 “(2)(A) If the Administrator, acting under the Feder-
17 al Insecticide, Fungicide, and Rodenticide Act (7 U.S.C.
18 136 et seq.), with or without the consent of the registrant,
19 suspends the use of each registered pesticide that contains
20 a particular pesticide chemical and that is labeled for use
21 on a particular food, due in whole or in part to dietary
22 risks to humans posed by residues of the pesticide chemi-
23 cal in or on the food, the Administrator shall suspend any
24 tolerance or exemption under this section or section 409
25 that allows the presence of the pesticide chemical, or any

1 pesticide chemical residue that results from its use, in or
2 on the food.

3 “(B) The suspension of a tolerance or exemption
4 under subparagraph (A) shall be effective as long as each
5 associated registration of a pesticide is suspended under
6 the Federal Insecticide, Fungicide, and Rodenticide Act
7 (7 U.S.C. 136 et seq.).

8 “(C) While a suspension of a tolerance or exemption
9 is in effect the tolerance or exemption shall not be consid-
10 ered to be in effect. If the suspension of the associated
11 registration of the pesticide under the Federal Insecticide,
12 Fungicide, and Rodenticide Act (7 U.S.C. 136 et seq.) is
13 terminated, leaving the registration of the pesticide for the
14 use in effect under such Act, the Administrator shall re-
15 scind any associated suspension of a tolerance or exemp-
16 tion.

17 “(D) The effective date of a suspension described in
18 subparagraph (A) shall be 120 days after the date on
19 which the registration that is the subject of an order of
20 suspension or an order of emergency suspension initially
21 applies to the pesticide chemical.

22 “(E) The effective date of a suspension may be de-
23 layed in accordance with subparagraphs (C), (D), (E) and
24 (F) of paragraph (1).

1 “(3)(A) In connection with action taken under para-
2 graph (1)(A) or (2)(A) or taken with respect to pesticides
3 whose registrations were canceled prior to the effective
4 date of this section, if the Administrator determines that
5 a residue of the canceled or suspended pesticide chemical
6 will unavoidably persist in the environment and be present
7 in or on a food, the Administrator may establish a toler-
8 ance for the pesticide chemical residue at a level that per-
9 mits the unavoidable residue to remain in or on the food
10 and will protect the public health. In establishing such a
11 tolerance, the Administrator shall use the procedures set
12 forth in subsection (e).

13 “(B) Not later than 1 year after the date on which
14 action is taken under paragraph (1)(A) or (2)(A), and not
15 less than annually thereafter until the date on which the
16 revocation or suspension of the tolerance becomes effec-
17 tive, the Administrator shall reduce the tolerance for the
18 pesticide chemical residue under this section or section
19 409, if any decrease in residual environmental contamina-
20 tion by the pesticide chemical, or residues of the pesticide
21 chemical in or on lawfully treated food has occurred, based
22 on information reasonably available to the Administrator.

23 “(4) Review of a final order under this paragraph
24 shall be in accordance with subsection (i).

1 “(q)(1) The Administrator shall not establish a toler-
2 ance for a pesticide chemical residue, or allow such a toler-
3 ance to remain in effect, under this section or section 409
4 unless the Administrator determines, after consultation
5 with the Secretary, that—

6 “(A) there is a method for detecting and meas-
7 uring the levels of such pesticide chemical residue in
8 or on a food that will detect the residue at the level
9 established by the tolerance; and

10 “(B) such method is the best available, practi-
11 cal method.

12 “(2) A method shall be considered practical for pur-
13 poses of paragraph (1)(B) if—

14 “(A) the method can be performed by the Sec-
15 retary on a routine basis as part of surveillance and
16 compliance sampling of foods for pesticide chemical
17 residues with the personnel, equipment, and other
18 resources available to the Secretary; and

19 “(B)(i) the method is a multi-residue method;
20 or

21 “(ii) no multi-residue method is available.

TITLE IV—PESTICIDE INFORMATION

SEC. 401. DISCLOSING OF PESTICIDES IN IMPORT DOCUMENTS.

(a) RAW AGRICULTURAL COMMODITIES.—

(1) IN GENERAL.—Section 801 of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 381) is amended—

(A) by redesignating subsection (e) as subsection (f); and

(B) by inserting after subsection (d) the following new subsection:

“(e)(1)(A) No raw agricultural commodity may be admitted into the customs territory of the United States (as defined in general note 2 of the Harmonized Tariff Schedules of the United States) unless the importer of the specified agricultural commodity files with the Secretary and the Secretary of the Treasury, in accordance with subparagraph (B), an import document that identifies each pesticide chemical known to be or customarily used on, or in connection with the production of, the raw agricultural commodity by any agricultural producer or group of agricultural producers of the raw agricultural commodity.

“(B) On or before the date on which the raw agricultural commodity is imported, the importer described in

1 subparagraph (A) shall file with the Secretary and the
2 Secretary of the Treasury the import document described
3 in subparagraph (A).

4 “(2)(A) Except as provided in subparagraph (C), if
5 the Secretary determines that a sample of the raw agricul-
6 tural commodity submitted as the food sample described
7 in subsection (a) contains a pesticide chemical that was
8 not reported in the import document described in para-
9 graph (1) (hereafter in this subsection referred to as the
10 ‘unreported pesticide chemical’), the Secretary shall, ex-
11 cept as provided in subparagraph (B), require that the im-
12 porter file with any import document for any subsequent
13 shipment of the raw agricultural commodity listed in the
14 import document for the shipment associated with the
15 sample—

16 “(i) the results of an analysis designed to detect
17 levels of residues of the unreported pesticide chemi-
18 cal; and

19 “(ii) the results of an analysis designed to de-
20 tect the levels of all residues of other pesticide
21 chemicals used on, or in connection with the produc-
22 tion of, the raw agricultural commodity, as deter-
23 mined by the Secretary.

24 “(B) The Secretary may waive the requirements of
25 clauses (i) and (ii) of subparagraph (A) after the importer

1 has demonstrated a clear pattern of consistent compliance
2 under subparagraph (A), as determined in regulations pre-
3 scribed by the Secretary. The regulations shall require
4 that the Secretary take into account whether the failure
5 of the importer to include an unreported pesticide chemi-
6 cal in an import document described in paragraph (1) is
7 the first such failure by the importer.

8 “(C) Subparagraph (A) shall not apply if the import-
9 er described in subparagraph (A) demonstrates to the sat-
10 isfaction of the Secretary that—

11 “(i) the unreported pesticide chemical in or on
12 the raw agricultural commodity is attributable to the
13 long-term environmental persistence of the pesticide;
14 and

15 “(ii) the level of the residue of the pesticide
16 chemicals in or on the raw agricultural commodity
17 does not pose a risk to human health.

18 “(3) To the extent allowable by law, the Secretary
19 shall, on request by the appropriate official of a State
20 agency or department responsible for the monitoring of
21 raw agricultural commodities for residues of pesticide
22 chemicals in or on the commodities, provide to the official
23 any information obtained by the Secretary in the adminis-
24 tration of this subsection.”.

25 (2) CONFORMING AMENDMENTS.—

1 (A) Section 304(d)(1) of the Federal Food,
2 Drug, and Cosmetic Act (21 U.S.C. 334(d)(1))
3 is amended by striking "801(d)" each place the
4 term appears and inserting "801(f)".

5 (B) Section 802 of the Federal Food,
6 Drug, and Cosmetic Act (21 U.S.C. 382) is
7 amended—

8 (i) in subsection (b)(1)(G), by striking
9 "801(d)" and inserting "801(f)"; and

10 (ii) in subsection (f)(1)(E), by striking
11 "801(d)" and inserting "801(f)".

12 (b) MEAT.—Section 20 of the Federal Meat Inspec-
13 tion Act (21 U.S.C. 620) is amended by adding at the
14 end the following new subsection:

15 "(i)(1)(A) No meat may be admitted into the customs
16 territory of the United States (as defined in general note
17 2 of the Harmonized Tariff Schedule of the United States)
18 unless the importer of the meat files with the Secretary
19 and the Secretary of the Treasury, in accordance with sub-
20 paragraph (B), an import document that identifies each
21 pesticide chemical known to be or customarily used on,
22 or in connection with the production of, the meat by any
23 agricultural producer or group of agricultural producers
24 of the meat.

1 “(B) On or before the date on which the product is
2 imported, the importer described in subparagraph (A)
3 shall file with the Secretary and the Secretary of the
4 Treasury the import document described in subparagraph
5 (A).

6 “(2)(A) Except as provided in subparagraph (C), if
7 the Secretary determines that a sample of the meat sub-
8 mitted under subsection (f) contains a pesticide chemical
9 that was not reported in the import document described
10 in paragraph (1) (hereafter in this paragraph referred to
11 as the ‘unreported pesticide chemical’), the Secretary
12 shall, except as provided in subparagraph (B), require that
13 the importer file with any import document for any subse-
14 quent shipment of the product listed in the import docu-
15 ment for the shipment associated with the sample—

16 “(i) the results of an analysis designed to detect
17 levels of residues of the unreported pesticide chemi-
18 cal; and

19 “(ii) the results of an analysis designed to de-
20 tect the levels of all residues of other pesticide
21 chemicals used on, or in connection with the produc-
22 tion of, the meat, as determined by the Secretary.

23 “(B) The Secretary may waive the requirements of
24 clauses (i) and (ii) of subparagraph (A) after the importer
25 has demonstrated a clear pattern of consistent compliance

1 under subparagraph (A), as determined in regulations pre-
2 scribed by the Secretary. The regulations shall require
3 that the Secretary take into account whether the failure
4 of the importer to include an unreported pesticide chemi-
5 cal in an import document described in paragraph (1) is
6 the first such failure by the importer.

7 “(C) Subparagraph (A) shall not apply if the import-
8 er described in subparagraph (A) demonstrates to the sat-
9 isfaction of the Secretary that—

10 “(i) the unreported pesticide chemical in or on
11 the meat is attributable to the long-term environ-
12 mental persistence of the pesticide; and

13 “(ii) the level of the residue of the pesticide
14 chemicals in or on the meat does not pose a risk to
15 human health.

16 “(3) To the extent allowable by law, the Secretary
17 shall, on request by the appropriate official of a State
18 agency or department responsible for the monitoring of
19 food for residues of pesticide chemicals in or on the food,
20 provide to the official any information obtained by the Sec-
21 retary in the administration of this subsection.”.

22 (c) POULTRY.—Section 17 of the Poultry Products
23 Inspection Act (21 U.S.C. 466) is amended by adding at
24 the end the following new subsection:

1 “(e)(1)(A) No imported poultry described in subsec-
2 tion (d) may be admitted into the customs territory of the
3 United States (as defined in general note 2 of the Harmo-
4 nized Tariff Schedule of the United States) unless the im-
5 porter of the poultry files with the Secretary and the Sec-
6 retary of the Treasury, in accordance with subparagraph
7 (B), an import document that identifies each pesticide
8 chemical known to be or customarily used on, or in connec-
9 tion with the production of, the poultry by any agricultural
10 producer or group of agricultural producers of the poultry.

11 “(B) On or before the date on which the poultry is
12 imported, the importer described in subparagraph (A)
13 shall file with the Secretary and the Secretary of the
14 Treasury the import document described in subparagraph
15 (A).

16 “(2)(A) Except as provided in subparagraph (C), if
17 the Secretary determines that a sample of the poultry sub-
18 mitted under subsection (d) contains a pesticide chemical
19 that was not reported in the import document described
20 in paragraph (1) (hereafter in this paragraph referred to
21 as the ‘unreported pesticide chemical’), the Secretary
22 shall, except as provided in subparagraph (B), require that
23 the importer file with any import document for any subse-
24 quent shipment of the poultry listed in the import docu-
25 ment for the shipment associated with the sample—

1 “(i) the results of an analysis designed to detect
2 levels of residues of the unreported pesticide chemi-
3 cal; and

4 “(ii) the results of an analysis designed to de-
5 tect the levels of all residues of other pesticide
6 chemicals used on, or in connection with the produc-
7 tion of, the poultry, as determined by the Secretary.

8 “(B) The Secretary may waive the requirements of
9 clauses (i) and (ii) of subparagraph (A) after the importer
10 has demonstrated a clear pattern of consistent compliance
11 under subparagraph (A), as determined in regulations pre-
12 scribed by the Secretary. The regulations shall require
13 that the Secretary take into account whether the failure
14 of the importer to include an unreported pesticide chemi-
15 cal in an import document described in paragraph (1) is
16 the first such failure by the importer.

17 “(C) Subparagraph (A) shall not apply if the import-
18 er described in subparagraph (A) demonstrates to the sat-
19 isfaction of the Secretary that—

20 “(i) the unreported pesticide chemical in or on
21 the poultry is attributable to the long-term environ-
22 mental persistence of the pesticide; and

23 “(ii) the level of the residue of the pesticide
24 chemicals in or on the poultry does not pose a risk
25 to human health.

1 “(3) To the extent allowable by law, the Secretary
2 shall, on request by the appropriate official of a State
3 agency or department responsible for the monitoring of
4 food for residues of pesticide chemicals in or on the food,
5 provide to the official any information obtained by the Sec-
6 retary in the administration of this subsection.”.

7 (d) EGGS.—Section 17 of the Egg Products Inspec-
8 tion Act (21 U.S.C. 1046) is amended by adding at the
9 end the following new subsection:

10 “(e)(1)(A) No imported egg or egg product described
11 in subsection (a) may be admitted into the customs terri-
12 tory of the United States (as defined in general note 2
13 of the Harmonized Tariff Schedule of the United States)
14 unless the importer of the egg or egg product files with
15 the Secretary and the Secretary of the Treasury, in ac-
16 cordance with subparagraph (B), an import document that
17 identifies each pesticide chemical known to be or custom-
18 arily used on, or in connection with the production of, the
19 egg or egg product by any agricultural producer or group
20 of agricultural producers of the egg or egg product.

21 “(B) On or before the date on which the egg or egg
22 product is imported, the importer described in subpara-
23 graph (A) shall file with the Secretary and the Secretary
24 of the Treasury the import document described in sub-
25 paragraph (A).

1 “(2)(A) Except as provided in subparagraph (C), if
2 the Secretary determines that a sample of the egg or egg
3 product submitted under subsection (a) contains a pesti-
4 cide chemical that was not reported in the import docu-
5 ment described in paragraph (1) (hereafter in this para-
6 graph referred to as the ‘unreported pesticide chemical’),
7 the Secretary shall, except as provided in subparagraph
8 (B), require that the importer file with any import docu-
9 ment for any subsequent shipment of the egg or egg prod-
10 uct listed in the import document for the shipment associ-
11 ated with the sample—

12 “(i) the results of an analysis designed to detect
13 levels of residues of the unreported pesticide chemi-
14 cal; and

15 “(ii) the results of an analysis designed to de-
16 tect the levels of all residues of other pesticide
17 chemicals used on, or in connection with the produc-
18 tion of, the egg or egg product, as determined by the
19 Secretary.

20 “(B) The Secretary may waive the requirements of
21 clauses (i) and (ii) of subparagraph (A) after the importer
22 has demonstrated a clear pattern of consistent compliance
23 under subparagraph (A), as determined in regulations pre-
24 scribed by the Secretary. The regulations shall require
25 that the Secretary take into account whether the failure

1 of the importer to include an unreported pesticide chemi-
2 cal in an import document described in paragraph (1) is
3 the first such failure by the importer.

4 “(C) Subparagraph (A) shall not apply if the import-
5 er described in subparagraph (A) demonstrates to the sat-
6 isfaction of the Secretary that—

7 “(i) the unreported pesticide chemical in or on
8 the egg or egg product is attributable to the long-
9 term environmental persistence of the pesticide; and

10 “(ii) the level of the residue of the pesticide
11 chemicals in or on the egg or egg product do not
12 pose a risk to human health.

13 “(3) To the extent allowable by law, the Secretary
14 shall, on request by the appropriate official of a State
15 agency or department responsible for the monitoring of
16 food for residues of pesticide chemicals in or on the food,
17 provide to the official any information obtained by the Sec-
18 retary in the administration of this subsection.”.

19 **SEC. 402. ANNUAL REPORTS BY AGRICULTURAL ATTACHES.**

20 Section 108 of the Agricultural Act of 1954 (7 U.S.C.
21 1748) (as added by section 1532 of the Food, Agriculture,
22 Conservation, and Trade Act of 1990 (Public Law 101-
23 624)) is amended—

24 (1) in subsection (a)(1)—

1 (A) by striking "and" at the end of sub-
2 paragraph (B);

3 (B) by adding after subparagraph (C) the
4 following new subparagraph:

5 "(D) the customary use of the pesticides in
6 the production of agricultural commodities in
7 such countries, except that—

8 "(i) a priority shall be placed on gath-
9 ering information on agricultural commod-
10 ities that the country exports to the United
11 States; and

12 "(ii) to the extent practicable, gather
13 information on agricultural commodities
14 that the country may export to the United
15 States via a third country; and"; and

16 (2) in subsection (b)—

17 (A) by striking "and" at the end of para-
18 graph (3);

19 (B) by striking the period at the end of
20 paragraph (4) and inserting "; and"; and

21 (C) by adding at the end thereof the fol-
22 lowing new paragraph:

23 "(5) annually provide the information in reports
24 prepared under subsection (a)(1)(D) to the Secre-

1 tary of Health and Human Services and the Secre-
2 tary of the Treasury.”.

3 **TITLE V—EFFECTIVE DATES**

4 **SEC. 501. EFFECTIVE DATES.**

5 (a) **IN GENERAL.**—Except as otherwise provided in
6 this section, this Act and the amendments made by this
7 Act shall become effective on the date of enactment of this
8 Act.

9 (b) **IMPORTS AND EXPORTS.**—The amendments
10 made by section 105 shall become effective 180 days after
11 the date of enactment of this Act.

12 (c) **PESTICIDE RESIDUE MONITORING.**—The amend-
13 ment made by title II shall become effective 1 year after
14 the date of enactment of this Act.

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